SBC86834 Series

Intel® Core™ 2 Duo/ Pentium® D/ Pentium® 4/ Celeron® processor All-In-One

Mini ITX Board with DVI/LVDS

User's Manual

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Caution

If you replace wrong batteries, it causes the danger of explosion. It is recommended by the manufacturer that you follow the manufacturer's instructions to only replace the same or equivalent type of battery, and dispose of used ones.

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ESD Precautions

Computer boards have integrated circuits sensitive to static electricity. To prevent chipsets from electrostatic discharge damage, please take care of the following jobs with precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before holding the board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

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MEMO

CHAPTER 1
INTRODUCTION

The **SBC86834**, a Mini ITX board, supports Intel® Core™ 2 Duo, Intel® Celeron® 400 Series, Intel® Pentium® 4 processor in the LGA775 Land Grid Array package or Intel® Pentium® D processor (supports 775-Land package) at FSB 533/800 MT/s (133/200 MHz). The board integrates chipsets Intel® 945GC and ICH7/7R (optional) that deliver outstanding system performance through high-bandwidth interfaces, multiple I/O functions for interactive applications and various embedded computing solutions. There are two 240-pin unbuffered DIMM sockets for dual channel DDR2-400/533/667 MHz

memory, maximum memory capacity up to 2GB. It also features Gigabit/Fast Ethernet, two serial ATA channels for total two Serial ATA hard drives at maximum transfer rate up to 300MB/sec, six USB 2.0 high speed compliant, built-in AC'97 audio codec that can achieve the best stability and reliability for industrial applications. It provides one PCI Express x 4 through Riser Card. Additionally, it provides you with unique embedded features, such as 6 serial ports and Mini ITX form factor that applies an extensive array of PC peripherals.

1.1 Specifications

- **CPU**
  - **Intel® Core™ 2 Duo, Celeron® 400 series , Pentium® 4 processor in the LGA775 Land Grid Array package and Pentium® D processor (supports 775-Land package)**
- **System Chipset**
  - **Intel® 945GC & ICH7/7R(Optional)**
- **CPU Socket**
  - **LGA775**
- **Front-Side Bus**
  - **533/800 MT/s (133/200 MHz)**
- **BIOS**
  - Phoenix-Award BIOS, Y2K compliant
  - 8Mbit FWH Flash, DMI, Plug and Play
  - "Load Optimized Default" to backup customized Setting in the BIOS flash chip to prevent from CMOS battery fail
- **System Memory**
  - Two 240-pin unbuffered DDR2 DIMM sockets
  - Maximum to 2GB DDR2 400/533/667 MHz memory
- **Onboard Multi I/O**
  - Controller: Winbond W83627UHG

- Serial Ports: Six ports for RS-232

- **CompactFlash™ Socket**
  - One CompactFlash™ Type II Socket **(Optional)**

- **USB Interface**
  - Six USB ports with fuse protection and complies with USB Spec. Rev. 2.0

- **Display**
  - CRT connector @ rear I/O over DVI connector from DAC port, DVI-D via Chrontel CH7307C from SDVO below CRT connector
  - One 40-pin connector for 24-bit dual channel LVDS via Chrontel CH7308B from SDVO as EFP port and one 7-pin inverter connector

- **Watchdog Timer**
  - 1~255 seconds; up to 255 levels

- **Expansion Interface**
  - One PCI Express x 4 slot for dual PCI Express x1 via riser card.

- **Ethernet**
  - Dual port with RTL8111B for Gigabit/Fast Ethernet
  - RJ-45 over double deck USB

- **Audio**
  - AC'97 Audio compliant (with Speaker/line-out & MIC-in) via ALC203
  - Internal Audio features for speaker-out & MIC-in (L, GND, R, GND, MIC-in) via wafer connector

- **Power Management**
  - ACPI (Advanced Configuration and Power Interface)

- **Form Factor**
  - Mini ITX form factor

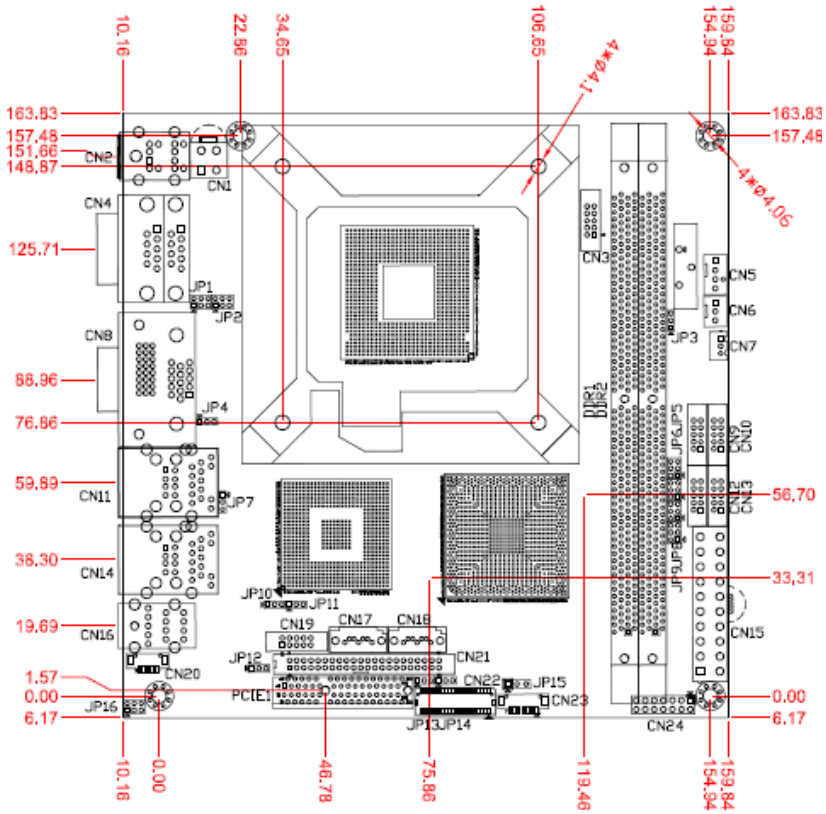
NOTE *All specifications and images are subject to change without notice.*

1.2 Utilities Supported

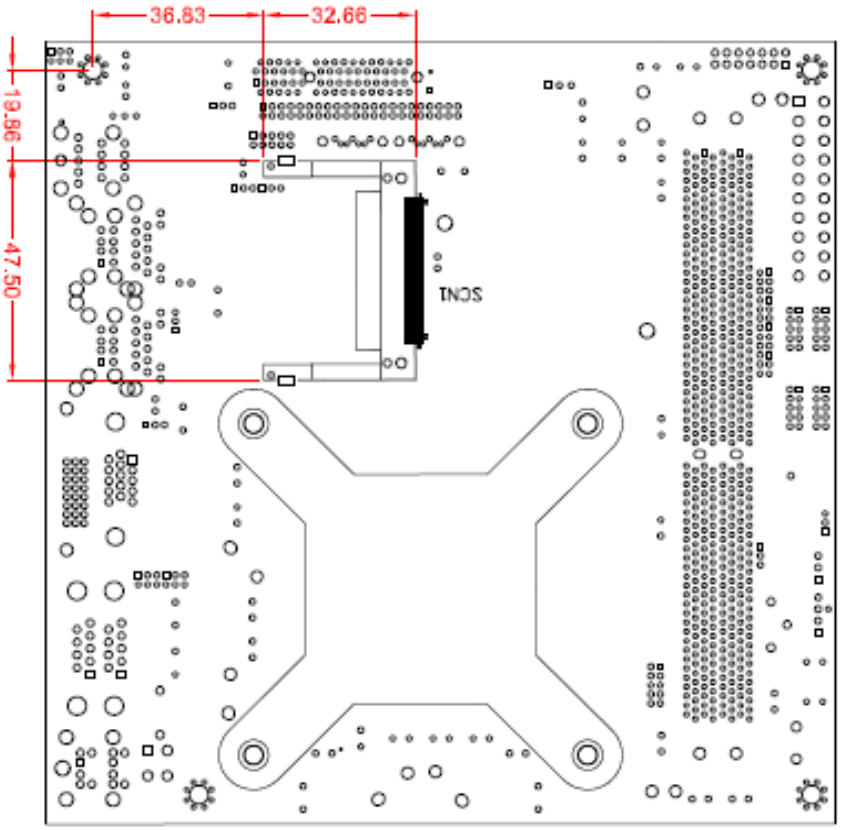
- Chipset Driver
- Ethernet Driver
- Graphic Driver
- Audio Driver
- Intel Matrix Storage manager

CHAPTER 2
JUMPERS AND CONNECTORS

2.1 Board Dimensions and Fixing Holes

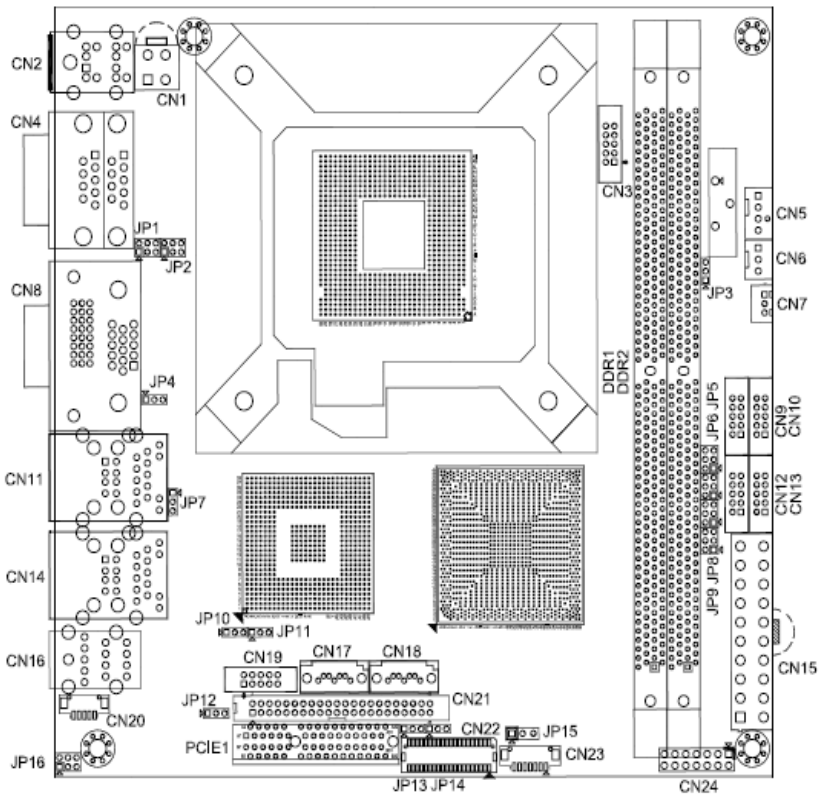


Component Side

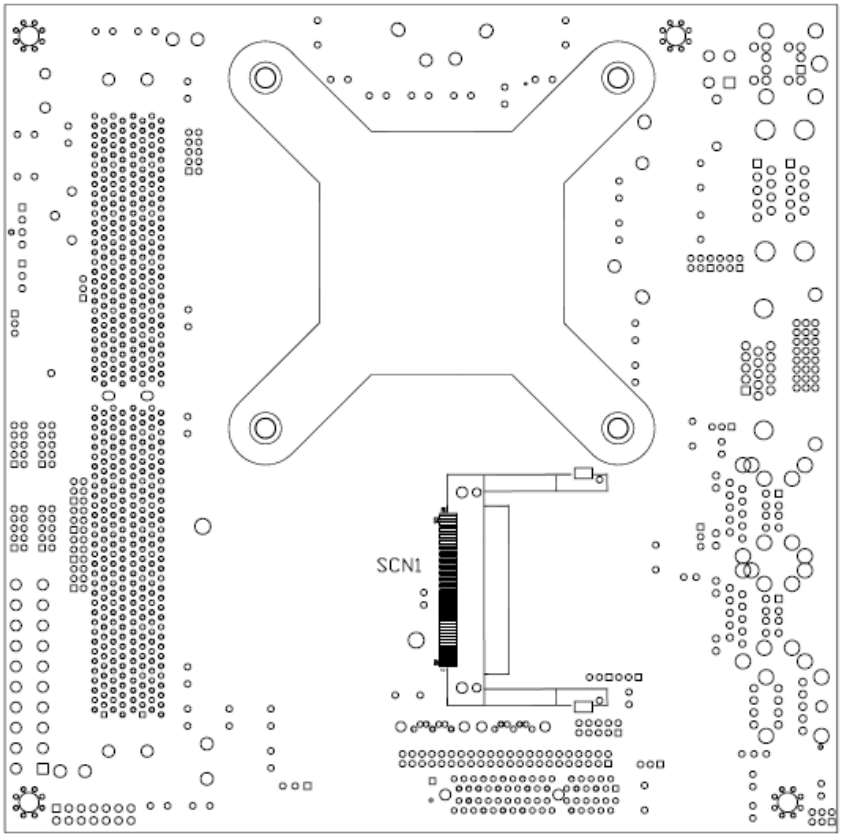


Solder Side

2.2 Board Layout



Component Side



Solder Side

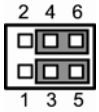
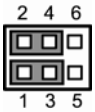
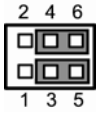
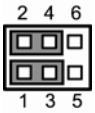
2.3 Jumper Settings

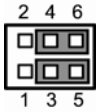
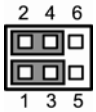
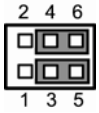
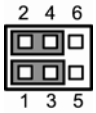
Proper jumer settings configure the **SBC86834** to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

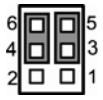
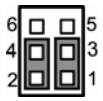
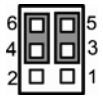
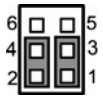
Jumper	Default		Setting
JP1	COM2 Mode Select	CN4A Pin 1: DCD	Short 3-5
		CN4A Pin 9: RI	Short 4-6
JP2	COM1 Mode Select	CN4B Pin 1: DCD	Short 3-5
		CN4B Pin 9: RI	Short 4-6
JP3	Clear CMOS Setting : Normal		Short 1-2
JP4	USB Port2/3(CN11) Power Select : 5V		Short 2-3
JP5	COM3 Mode Select	CN9 Pin 1: DCD	Short 3-5
		CN9 Pin 8: RI	Short 4-6
JP6	COM4 Mode Select	CN10 Pin 1: DCD	Short 3-5
		CN10 Pin 8: RI	Short 4-6
JP7	USB Port0/1(CN14) Power Select : 5V		Short 2-3
JP8	COM6 Mode Select	CN12 Pin 1: DCD	Short 3-5
		CN12 Pin 8: RI	Short 4-6
JP9	COM5 Mode Select	CN13 Pin 1: DCD	Short 3-5
		CN13 Pin 8: RI	Short 4-6
JP10	PCIE1 Slot Select (Optional) : PCIE x1		Short 2-3
JP11	PCIE1 Slot Select (Optional) : PCIE x1		Short 2-3
JP12	USB Port4/5(CN19) Power Select : 5V		Short 2-3
JP13	Compact Flash Select(Optional) : Slave		Short 1-2
JP14	Compact Flash Power Select(Optional) : 3.3V		Short 1-2
JP15	LVDS Voltage Select : 3.3V		Short 1-2
JP16	Audio Line Out/Speaker Out : Line Out		Short 1-3 Short 2-4

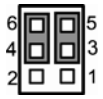
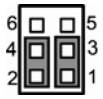
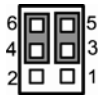
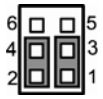
2.3.1 COM1~COM6 Mode Select for Type Jumpers (JP1, JP2, JP5, JP6, JP8, JP9)

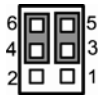
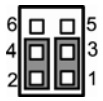
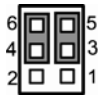
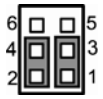
These jumpers select the COM1 ~ COM6 ports' DCD and RI mode.

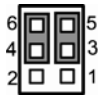
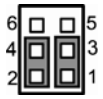
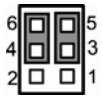
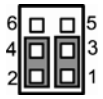
Description	Function	Jumper Setting (JP2)
COM1 (CN4B)	Pin 1=DCD (Default)	
	Pin 1=5V	
	Pin 9=RI (Default)	
	Pin 9=12V	

Description	Function	Jumper Setting (JP1)
COM2 (CN4A)	Pin 1=DCD (Default)	
	Pin 1=5V	
	Pin 9=RI (Default)	
	Pin 9=12V	

Description	Function	Jumper Setting (JP5)
COM3 (CN9)	Pin 1=DCD (Default)	
	Pin 1=5V	
	Pin 8=RI (Default)	
	Pin 8=12V	

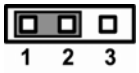
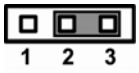
Description	Function	Jumper Setting (JP6)
COM4 (CN10)	Pin 1=DCD (Default)	
	Pin 1=5V	
	Pin 8=RI (Default)	
	Pin 8=12V	

Description	Function	Jumper Setting (JP9)
COM5 (CN13)	Pin 1=DCD (Default)	
	Pin 1=5V	
	Pin 8=RI (Default)	
	Pin 8=12V	

Description	Function	Jumper Setting (JP8)
COM6 (CN12)	Pin 1=DCD (Default)	
	Pin 1=5V	
	Pin 8=RI (Default)	
	Pin 8=12V	

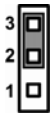
2.3.2 LVDS Voltage Select Jumper (JP15)

This jumper is to select the voltage for LVDS interface.

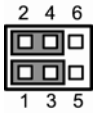
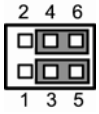
Description	Function	Jumper Setting
LVDS Voltage Select	3.3V (Default)	
	5V	

2.3.3 CMOS Clear Jumpers (JP3)

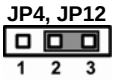
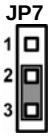
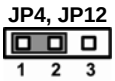
You may need to use this jumper is to clear the CMOS memory if incorrect settings in the Setup Utility.

Description	Function	Jumper Setting
CMOS Clear	Normal (Default)	
	Clear CMOS	

2.3.4 Audio Output Select Jumper (JP16)

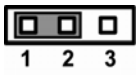
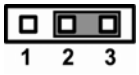
Description	Function	Jumper Setting
Audio Output Select	Line Out (Default)	
	Speak Out	

2.3.5 USB Power Select Jumpers (JP4, JP7, JP12)

Description	Function	Jumper Setting
USB Power Select	5V (Default)	
		
	+5VSBY	

2.3.6 CompactFlash™ Voltage Selection Jumper (JP14)

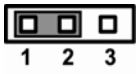
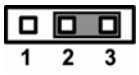
This jumper is to select the voltage for CompactFlash interface.

Description	Function	Jumper Setting
CompactFlash Voltage Selection	3.3V (Default)	
	5V	

This Jumper is *optional*. It is not mounted as a default design.

2.3.7 CompactFlash™ Mode (Master/Slave) Select Jumper (JP13)

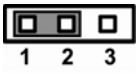
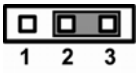
Use this jumper to set Master/Slave CompactFlash interface.

Description	Function	Jumper Setting
CompactFlash Mode (Master/Slave) Select	Slave(Default)	
	Master	

This jumper is optional. It is not mounted as a default design.

2.3.8 PCIE x 4/ PCIE x 1 Select Jumpers (JP10, JP11)

This jumper is to select the PCIE x 4 or PCIE x 1 interface for PCIE1 Slot.

Jumper	Description	Jumper Setting	Description	Jumper Setting
PCI-E Slot Function Select	PCIE x 4		PICE x 1 (Default)	

This jumper is optional. It is not mounted as a default design.

2.4 Connectors

Connectors connect the board with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected. Here is a summary table shows you all connectors on the **SBC86834** Series.

Connector	Label
ATX 12V Power Connector	CN1
PS/2 Keyboard/Mouse Connector	CN2
Digital I/O (DIO) Connector	CN3
COM1/COM2 Connector	CN4
CPU FAN Connector	CN5
System FAN Connector	CN6
SMBUS Connector	CN7
VGA / DVI-D(Optional) Connector	CN8
COM3 Connector	CN9
COM4 Connector	CN10
LAN2 / USB Port2/3 Connector	CN11
COM6 Connector	CN12
COM5 Connector	CN13
LAN1 / USB Port0/1 Connector	CN14
ATX Power Connector	CN15
Audio Phone Jack Connector	CN16
Serial ATA Port 1 Connector	CN17
Serial ATA Port 2 Connector	CN18
USB Port4/5 Connector	CN19
Internal Audio Connector	CN20
Parallel IDE Connector	CN21
LVDS Signal & Power Connector	CN22
LVDS Backlight Connector	CN23
Front Panel Bezel Connector	CN24
CF Card Socket	SCN1
PCI-Express x4 Expansion Slot	PCIE1

2.4.1 COM3~COM6 Port Connectors (CN9, CN10, CN12, CN13)

Jumper selectable with +5V/12V power capability is on DCD and RI, depending on the jumper setting.
Please refer to the RS-232 pin assignment as listed below:

Pin	Signal	Pin	Signal
1	Data Carrier Detect (DCD)	2	Data Set Ready (DSR)
3	Receive Data (RXD)	4	Request to Send (RTS)
5	Transmit Data (TXD)	6	Clear to Send (CTS)
7	Data Terminal Ready (DTR)	8	Ring Indicator (RI)
9	Ground (GND)	10	Ground (GND)

2.4.2 Digital I/O Port (DIO) Connector (CN3)

The board is equipped an 8-channel digital I/O connector **CN3** that meets requirements for a system customary automation control. The digital I/O can be configured to control cash drawers, sense warning signals from an Uninterrupted Power System (UPS), or perform store security control. The digital I/O is controlled via software programming.

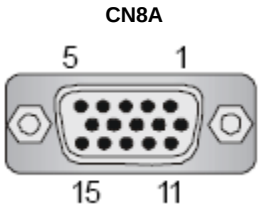
Pin	Signal	Pin	Signal
1	Digital Input 1	2	Digital Output 1
3	Digital Input 2	4	Digital Output 2
5	Digital Input 3	6	Digital Output 3
7	GND	8	Digital Output 4
9	GND	10	Digital Output 5

2.4.3 VGA & DVI-D Connector (CN8)

CN8 is a double deck VGA & DVI-D connector.
The upper **CN8A** is a standard 15-pin DB15 connector for the CRT VGA display.

The lower **CN8B** is a DVI-D connector for the single link digital visual interface display.

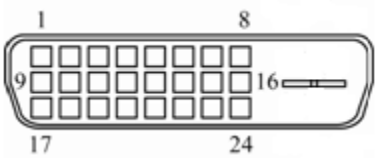
Pin	Signal
1	Red
2	Green
3	Blue
4	N.C
5	Ground
6	Ground
7	Ground
8	Ground(GND)
9	+5V
10	Ground (GND)
11	N.C
12	DDC DATA
13	Horizontal Sync
14	Vertical Sync
15	DDC CLK



Pin	Signal	Pin	Signal
1	TDC2-	2	TDC2+
3	Ground	4	NC
5	NC	6	DVI_DDC_CLOCK
7	DVI_DDC_DATA	8	NC
9	TDC1-	10	TDC1+
11	Ground	12	NC
13	NC	14	+5V
15	Ground	16	Hot plug detect
17	TDC0-	18	TDC0+
19	Ground	20	NC

Pin	Signal	Pin	Signal
21	NC	22	Ground
23	TLC+	24	TLC-

CN8B



2.4.4 LVDS Backlight Connector (CN23)

This is a 7-pin connector for inverter on the board that we strongly recommend you to use the matching DF13-7S-1.25C connector.

Pin	Signal
1	+12V
2	+12V
3	+5V
4	ENABLE
5	GND
6	GND
7	GND

2.4.5 Ethernet with USB Connectors (CN11, CN14)

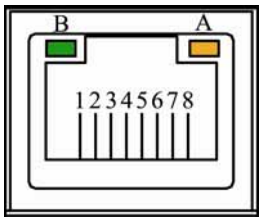
The board is equipped with two high performance Plug and Play Ethernet interface fully compliant with the IEEE 802.3 standard. To connect the board to 10-Base-T, 100-Base-T or 1000 Base-T hub, just plug one end of cable to the Ethernet connector and connect the other end (phone jack) to a 10-Base-T, 100-Base-T or 1000 Base-T hub.

The lower double-deck USB Connector (**CN11B, CN14B**) supports USB 2.0 compliant (480Mbps) that can be connected to any USB peripherals, such as keyboard, mouse, scanner

Pin	Signal
1	MDI3+
2	MDI3-
3	MDI2+
4	MDI2-
5	MDI1+
6	MDI1-
7	MDI0+
8	MDI0-
A	Active LED
B	100 LAN LED(Green)/ 1000 LAN LED(Orange)

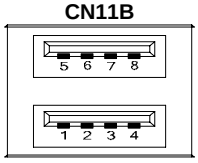
CN11A

CN14A



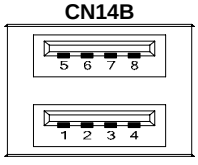
Pin	Signal
1	+5V
2	USB D2-
3	USB D2+
4	GND
5	+5V
6	USB D3-
7	USB D3+
8	GND

CN11B



Pin	Signal
1	+5V
2	USB D0-
3	USB D0+
4	GND
5	+5V
6	USB D1-
7	USB D1+
8	GND

CN14B



2.4.6 LVDS Flat Panel Connector (CN22)

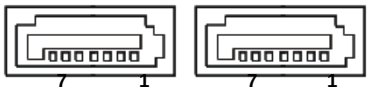
Use this 40-pin connector to support single channel 18-/24-bits or dual channel 36-/48-bits LVDS TFT LCD. It is strongly recommended to use the matching JST SHDR-40V-S-B connector.

Pin	Signal	Pin	Signal
1	VCCM	2	VCCM
3	VCCM	4	VCCM
5	VCCM	6	VCCM
7	N.C.	8	N.C.
9	GND	10	GND
11	Channel B D3-	12	Channel B D0-
13	Channel B D3+	14	Channel B D0+
15	GND	16	GND
17	Channel B CLK-	18	Channel B D1-
19	Channel B CLK+	20	Channel B D1+
21	GND	22	GND
23	Channel A D0-	24	Channel B D2-
25	Channel A D0+	26	Channel B D2+
27	GND	28	GND
29	Channel A D1-	30	Channel A D3-
31	Channel A D1+	32	Channel A D3+
33	GND	34	GND
35	Channel A D2-	36	Channel A CLK-
37	Channel A D2+	38	Channel A CLK+
39	GND	40	GND

2.4.7 SATA Connectors (CN17, CN18)

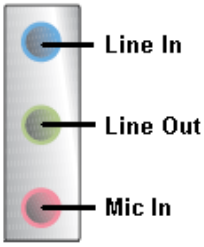
These SATA connectors are for high-speed SATA interface ports and they can be connected to hard disk devices.

Pin	Signal
1	GND
2	SATA_TX+
3	SATA_TX-
4	GND
5	SATA_RX-
6	SATA_RX+
7	GND



2.4.8 Audio Phone Jack Connector (CN16)

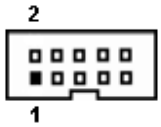
After installing onboard audio driver, you may connect speaker to Line Out jack, microphone to MIC in jack.



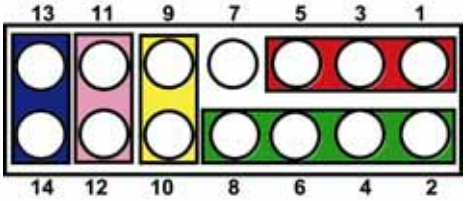
2.4.9 USB Connectors (CN19)

These Universal Serial Bus (USB) connectors on this board are for installing versatile USB interface peripherals. These are 10-pin standard USB connectors.

Pin	Signal	Pin	Signal
1	+5V	2	+5V
3	USB D4-	4	USB D5-
5	USB D4+	6	USB D5+
7	Ground (GND)	8	Ground (GND)
9	Ground (GND)	10	Ground (GND)



2.4.10 Flat Panel Bezel Connector (CN24)



- **Power LED**

  This 3-pin connector named as Pin 1, 3 and Pin 5 connect the system power LED indicator to such a switch on the case. Pin 1 is assigned as +, and Pin 3, Pin 5 as -. The Power LED lights up when the system is powered ON.

- **External Speaker and Internal Buzzer Connector**

  Pin 2, 4, 6 and 8 can be connected to the case-mounted speaker unit or internal buzzer. While connecting the CPU card to an internal buzzer, please short pins 2-4; while connecting to an external speaker, you need to set pins 2-4 to Open and connect the speaker cable to pin 8 (+) and pin 6 (-).

- **ATX Power On/Off Button**

  This 2-pin connector named as Pin 9 and 10 connect the front panel's ATX power button to the CPU card, which allows users to control ATX power supply to be power on/off.

- **System Reset Switch**
  Pin 11 and 12 can be connected to the case-mounted reset switch that reboots your computer, not turns OFF the power switch. It is a better way to reboot your system for a longer life of the system's power supply.

- **HDD Activity LED**
  This connection is linked to hard drive activity LED on the control panel. LED flashes when HDD is being accessed. Pin 13 and 14 connect the hard disk drive to the front panel HDD LED, Pin 13 assigned as -, and Pin 14 as +.

2.4.11 Internal Audio Connector (CN20)

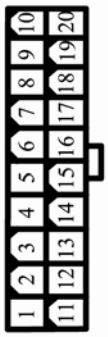
The board has a 5pin-header connector **CN20** for the internal audio interface. After installing the onboard audio driver, you may connect speaker to Line Out jack, microphone to MIC In.

Pin	Signal
1	LINE_OUT_L
2	GND
3	LINE_OUT_R
4	GND
5	MIC_IN

2.4.12 ATX Power Connector (CN15)

Steady and sufficient power can be supplied to all components on the board through the power connector. Please make sure all components and devices are properly installed before connecting the power connector. If you use a 20-pin ATX power supply, please remove the small cover from the power connector before plugging in the power cord; otherwise, please do not remove it.

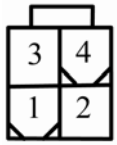
Pin	Signal	Pin	Signal
1	3.3V	2	3.3V
3	GND	4	5V
5	GND	6	5V
7	GND	8	PW_OK
9	5V_SB	10	12V
11	3.3V	12	-12V
13	GND	14	PS_ON
15	GND	16	GND
17	GND	18	-5V
19	5V	20	5V



2.4.13 ATX 12V Power Connector (CN1)

Connect the power cable to **CN1** for +12V ATX power supply.

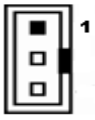
Pin	Signal
1	GND
2	GND
3	+12V
4	+12V



2.4.14 SMBUS Connector (CN7)

Connector CN7 is for SMBUS interface support

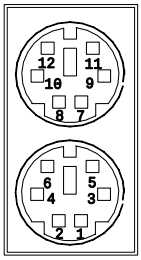
Pin	Signal
1	CLOCK
2	DATA
3	GND



2.4.15 Keyboard and PS/2 Mouse Connector (CN2)

The board provides a keyboard and Mouse interface with a DIN connector. To install the PS/2 keyboard and mouse, plug the mouse to the upper port (Green), and the keyboard to the lower port (Purple).

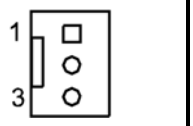
Pin	Signal	Pin	Signal
1	K/B Data	7	M/S Data
2	NC	8	NC
3	GND	9	GND
4	VCC	10	VCC
5	K/B CLK	11	M/S CLK
6	NC	12	NC



2.4.16 3 Pin Fan Connectors (CN6)

You can connect the system cooling fan cable to **CN6**.

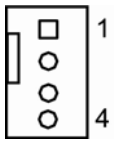
Pin	Signal
1	Ground
2	+12V
3	Sensor



2.4.17 4 Pin CPU Fan Connector (CN5)

You can connect the CPU cooling fan cable to **CN5**. It is for CPU cooling fan power.

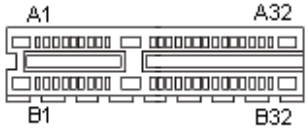
Pin	Signal
1	GND
2	+12V
3	Sensor
4	NC



2.4.18 PCI-EXPRESS x 4 Slot (PCIE1)

PCIE1 connector is for PCI-Express x 4 interface to support PCI-Express x 4 card.

Pin	Signa	Pin	Signal	Pin	Signal	Pin	Signal
A1	N.C	A2	+12V	B1	+12V	B2	+12V
A3	+12V	A4	GND	B3	+12V	B4	GND
A5	N.C	A6	N.C	B5	SMCLK	B6	SMDAT
A7	N.C	A8	N.C	B7	GND	B8	+3.3V
A9	+3.3V	A10	+3.3V	B9	N.C	B10	3.3VAUX
A11	RESET#	A12	GND	B11	WAKE#	B12	N.C
A13	PCIE_CLK+	A14	PCIE_CLK-	B13	GND	B14	PEG_TXP0
A15	GND	A16	PEG_RXP0	B15	PEG_TXN0	B16	GND
A17	PEG_RXN0	A18	GND	B17	N.C	B18	GND
End of the x1 Connector							
A19	N.C	A20	GND	B19	PEG_TXP1	B20	PEG_TXN1
A21	PEG_RXP1	A22	PEG_RXN1	B21	GND	B22	GND
A23	GND	A24	GND	B23	PEG_TXP2	B24	PEG_TXN2
A25	PEG_RXP2	A26	PEG_RXN2	B25	GND	B26	GND
A27	GND	A28	GND	B27	PEG_TXP3	B28	PEG_TXN3
A29	PEG_RXP3	A30	PEG_RXN3	B29	GND	B30	N.C
A31	GND	A32	N.C	B31	N.C	B32	GND



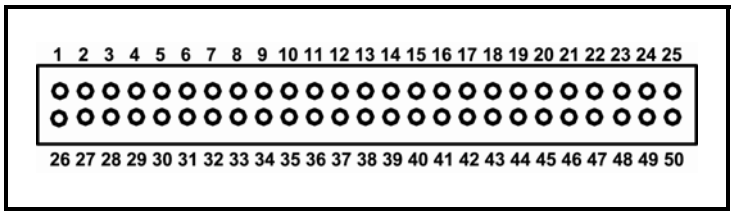
Please be noted the PCIe x4 slot is compliant with regular PCIe x4 add-on card.

2.4.19 CompactFlash™ Card Socket (SCN1)

The board is equipped with a CompactFlash™ disk type-II socket on the solder side to support an IDE interface CompactFlash™ disk card with DMA mode supported. The socket is especially designed to avoid incorrect installation of the CompactFlash™ disk card. When installing or removing the CompactFlash™ disk card, please make sure the system power is off. The CompactFlash™ disk card is defaulted as the C: or D: disk drive in your PC system.

This connector is *optional*. It is not mounted as a default design.

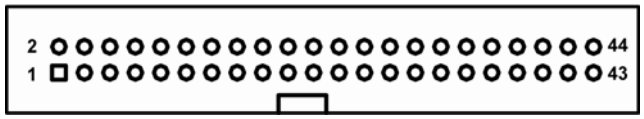
Pin	Signal	Pin	Signal
1	GND	2	Data 3
3	Data 4	4	Data 5
5	Data 6	6	Data 7
7	CS0#	8	Address 10
9	ATASEL	10	Address 9
11	Address 8	12	Address 7
13	VCC	14	Address 6
15	Address 5	16	Address 4
17	Address 3	18	Address 2
19	Address 1	20	Address 0
21	Data 0	22	Data 1
23	Data 2	24	IOCS16#
25	CD2#	26	CD1-
27	Data 11	28	Data 12
29	Data 13	30	Data 14
31	Data 15	32	CS1#
33	VS1#	34	IORD#
35	IOWR#	36	WE#
37	INTR	38	VCC
39	CSEL#	40	VS2#
41	RESET#	42	IORDY#
43	DMAREQ	44	DMAACK-
45	DASP#	46	PDIAG#
47	Data 8	48	Data 9
49	Data 10	50	GND



2.4.20 Parallel IDE Connector (CN21)

CN21 is a 44-pin IDE interface connector for standard 2.5" IDE device.

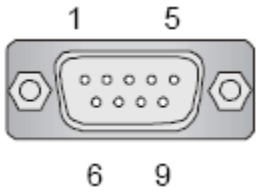
Pin	Signal	Pin	Signal	Pin	Signal
1	Reset #	2	GND	3	Data 7
4	Data 8	5	Data 6	6	Data 9
7	Data 5	8	Data 10	9	Data 4
10	Data 11	11	Data 3	12	Data 12
13	Data 2	14	Data 13	15	Data 1
16	Data 14	17	Data 0	18	Data 15
19	GND	20	NC	21	DREG#
22	GND	23	IOW #	24	GND
25	IOR #	26	GND	27	IOCHRDY
28	CSEL	29	DACK#	30	GND
31	Interrupt	32	NC	33	SA1
34	PDIAG#	35	SA0	36	SA2
37	HDC CS0 #	38	HDC CSI #	39	HDD Active #
40	GND	41	VCC	42	VCC
43	GND	44	NC		



2.4.21 COM1, COM2 Port Connector (CN4)

CN4 is a double deck D-Sub connector. The upper **CN4A** is a standard 9-pin DB9 connector for the Serial Port1 RS-232, jumper selectable with the +5V/12V power capability is on DCD and RI, depending on the jumper setting.

Pin	Signal
1	Data Carrier Detect (DCD)
2	Receive Data (RXD)
3	Transmit Data (TXD)
4	Data Terminal Ready (DTR)
5	Ground (GND)
6	Data Set Ready (DSR)
7	Request to Send (RTS)
8	Clear to Send (CTS)
9	Ring Indicator (RI)



MEMO

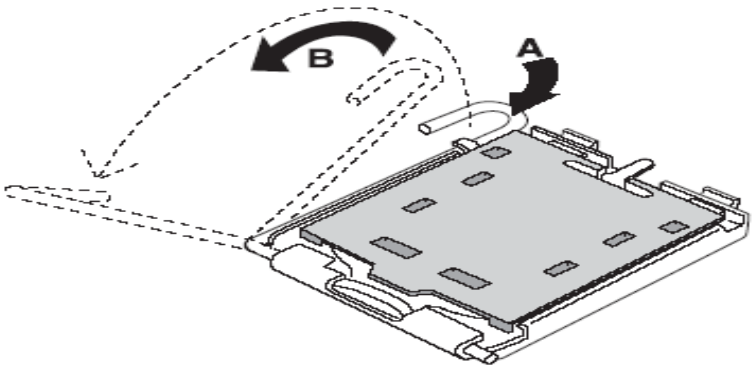
CHAPTER 3
HARDWARE INSTALLATION

Before installing the processor, please access Intel® website for more detailed information http://www.intel.com .

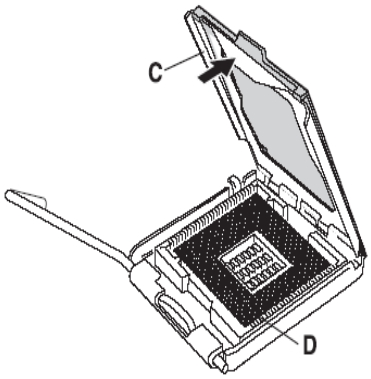
3.1 Installing the Processor

The LGA775 processor socket comes with a cover to protect the processor. Please install the processor into the CPU socket step by step as below:

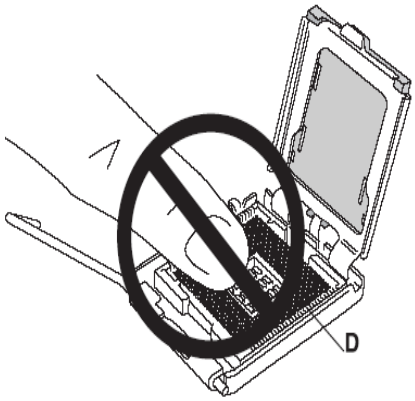
1. Hold the hook (A) of the lever and push it down. Pull the lever (B) aside to unlock the cover.



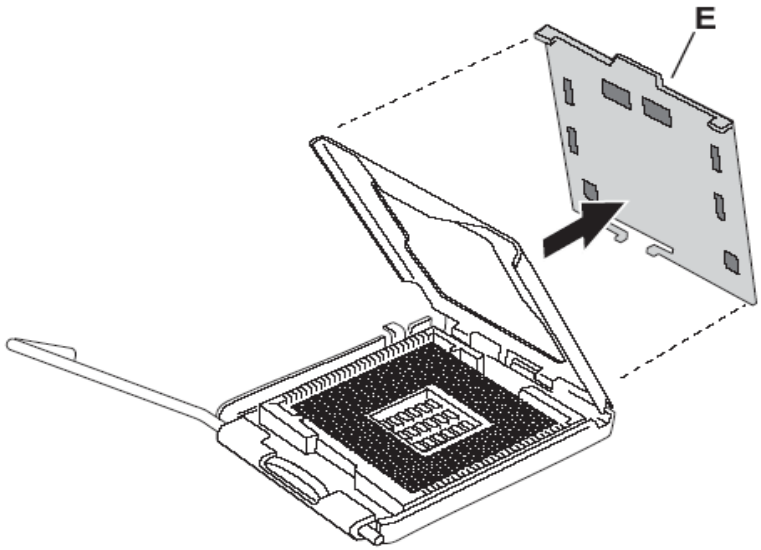
2. Open the cover (C), you can see the contact.



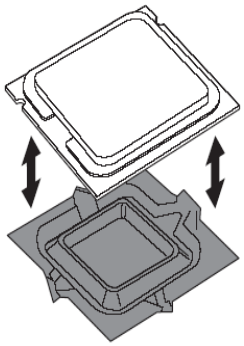
3. Be careful not to touch the contact (D).

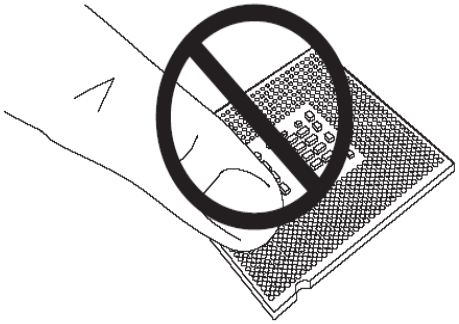


4. Remove the plastic cap (E) from the cover.

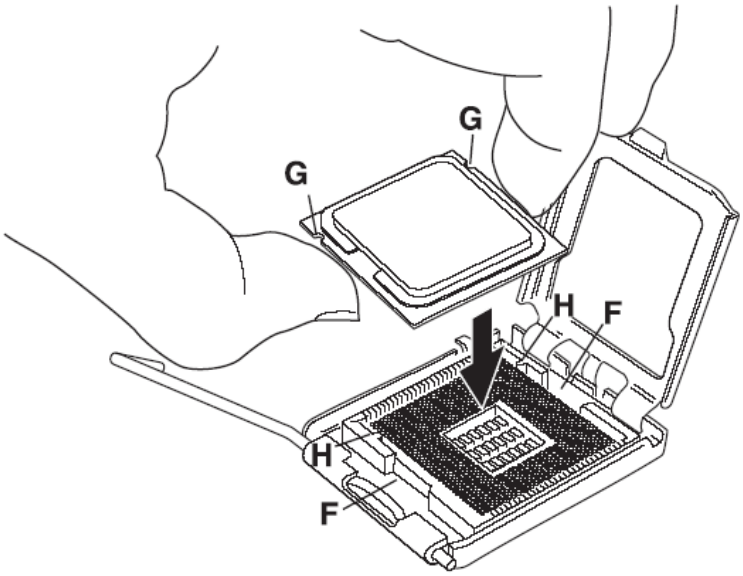


5. Place the CPU down into the socket. Be careful not to touch the contact.

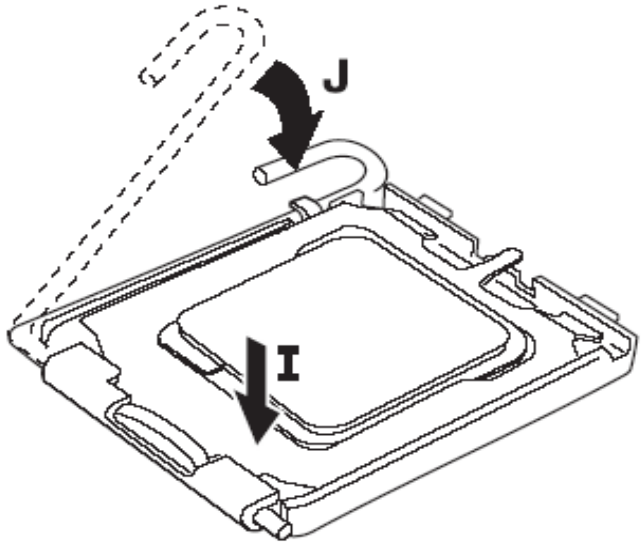




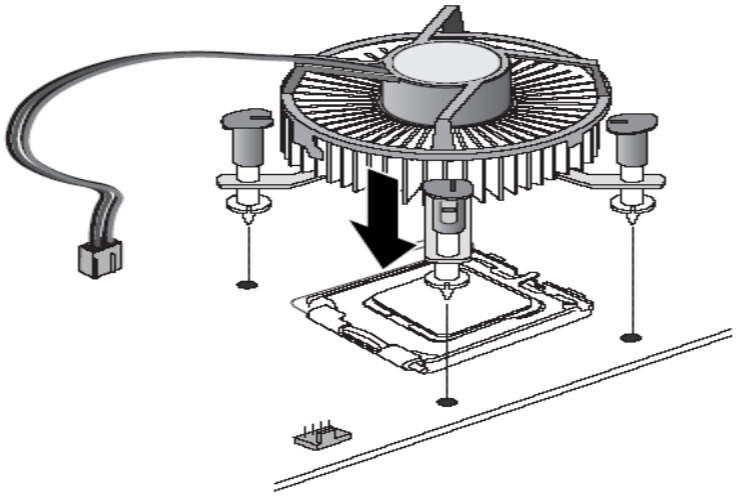
6. Hold the edges of the CPU, and orientate it as the marked direction (G) down into the socket to match the (H) and (F) locations.



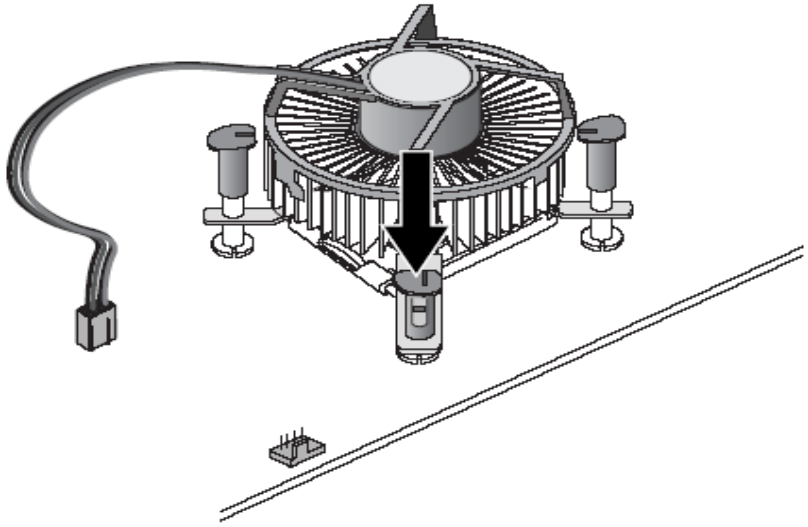
7. Slightly push down the cover and hook the lever (I~J). The CPU is completely locked.



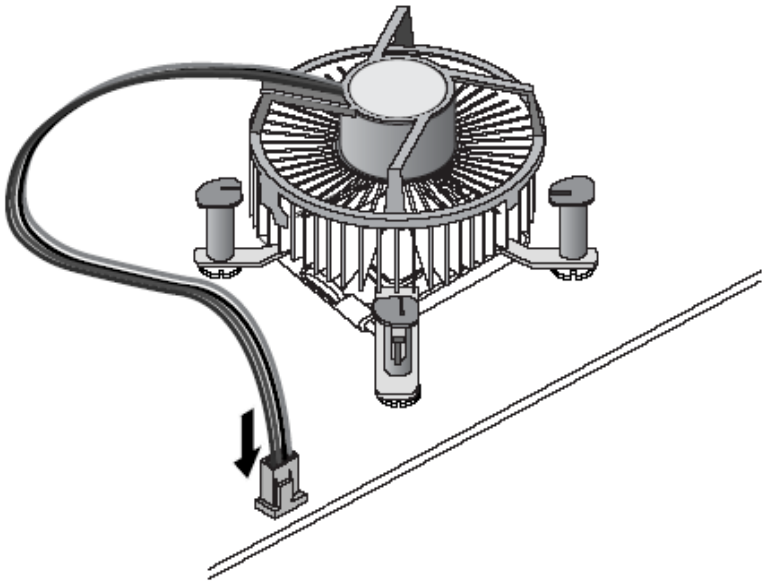
8. Orientate the CPU cooling fan to fixing holes on the board.



9. Screw the CPU cooling fan onto the board.



10. Make sure the CPU fan is plugged to the CPU fan connector.

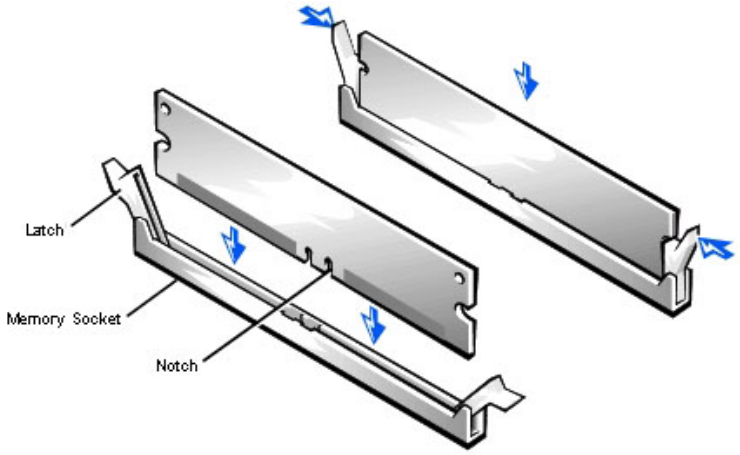


3.2 Installing the Memory

The board supports four 240-pin DDR2 DIMM memory sockets with maximum memory capacity up to 2GB.

Please follow steps below to install the memory modules:

1 Push down latches on each side of the DIMM socket.
2 Align the memory module with the socket that notches of memory module must match the socket keys for a correct intallation.
3 Install the memory module into the socket and push it firmly down until it is fully seated. The socket latches are levered upwards and clipped on to the edges of the DIMM.
4 Install any remaining DIMM modules.



CHAPTER 4
HARDWARE DESCRIPTION

4.1 Microprocessors

The **SBC86834** Series supports Intel® Core™ 2 Duo, Intel® Celeron® 400 Series, Intel® Pentium® 4 processor in the LGA775 Land Grid Array package or Intel® Pentium® D processor (supports 775-Land package), which make your system operated under Windows 2000/XP and Windows VISTA environments.The system performance depends on the microprocessor. Make sure all correct settings are arranged for your installed microprocessor to prevent the CPU from damages.

4.2 BIOS

The **SBC86834** Series uses Award Plug and Play BIOS with a single 8Mbit FWH Flash, DMI, Plug and Play.

4.3 System Memory

The **SBC86834** Series industrial CPU card supports two 240-pin unbuffered DDR2 DIMM sockets for a maximum memory of 2GB DDR2 SDRAMs. The memory module can come in sizes of 128MB, 256MB, 512MB, 1GB and 2GB.

4.4 I/O Port Address Map

The Intel® Core™ 2 Duo Processor, Intel® Pentium® D Processor, Intel® Celeron® Processor can communicate via I/O ports. There are total 1KB port addresses available for assignment to other devices via I/O expansion cards.

[00000000 - 0000000F]	Direct memory access controller
[00000000 - 00000CF7]	PCI bus
[00000010 - 0000001F]	Motherboard resources
[00000020 - 00000021]	Programmable interrupt controller
[00000022 - 0000003F]	Motherboard resources
[00000040 - 00000043]	System timer
[00000044 - 0000005F]	Motherboard resources
[00000060 - 00000060]	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000061 - 00000061]	System speaker
[00000062 - 00000063]	Motherboard resources
[00000064 - 00000064]	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000065 - 0000006F]	Motherboard resources
[00000070 - 00000073]	System CMOS/real time clock
[00000074 - 0000007F]	Motherboard resources
[00000080 - 00000090]	Direct memory access controller
[00000091 - 00000093]	Motherboard resources
[00000094 - 0000009F]	Direct memory access controller
[000000A0 - 000000A1]	Programmable interrupt controller
[000000A2 - 000000BF]	Motherboard resources
[000000C0 - 000000DF]	Direct memory access controller
[000000E0 - 000000EF]	Motherboard resources
[000000F0 - 000000FF]	Numeric data processor
[000001F0 - 000001F7]	Primary IDE Channel
[00000274 - 00000277]	ISAPNP Read Data Port
[00000279 - 00000279]	ISAPNP Read Data Port
[00000280 - 000002FF]	Motherboard resources
[000002E0 - 000002E7]	Communications Port (COM6)
[000002E8 - 000002EF]	Communications Port (COM4)
[000002F0 - 000002F7]	Communications Port (COM5)
[000002F8 - 000002FF]	Communications Port (COM2)
[000003B0 - 000003BB]	Intel(R) 82945G Express Chipset Family
[000003C0 - 000003DF]	Intel(R) 82945G Express Chipset Family
[000003E8 - 000003EF]	Communications Port (COM3)
[000003F6 - 000003F6]	Primary IDE Channel
[000003F8 - 000003FF]	Communications Port (COM1)

4.5 Interrupt Controller

The **SBC86834 Series** is a 100% PC compatible control board. It consists of 16 interrupt request lines, and four out of them can be programmable. The mapping list of the 16 interrupt request lines is shown as the following table.

IRQ	Parity check error
IRQ0	System timer
IRQ1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
IRQ2	Interrupt rerouting from IRQ8 through IRQ15
IRQ3	Serial port #2, #4, #6
IRQ4	Serial port #1, #3, #5
IRQ5	PCI Device Share
IRQ7	PCI Device Share
IRQ8	System CMOS/real time clock
IRQ9	Microsoft ACPI-Conpliant System
IRQ10	PCI Device Share
IRQ11	PCI Device Share
IRQ12	PS/2 Compatible Mouse
IRQ13	Numeric data processor
IRQ14	Primary IDE channel
IRQ15	—

MEMO

CHAPTER 5
PHOENIX-AWARD BIOS UTILITY

The Phoenix-Award BIOS provides users with a built-in Setup program to modify basic system configuration. All configured parameters are stored in a battery-backed-up RAM (CMOS RAM) to save the Setup information whenever the power is turned off.

5.1 Entering Setup

There are two ways to enter the Setup program. You may either turn ON the computer and press <Del> immediately, or press the <Del> and/or <Ctrl>, <Alt>, and <Esc> keys simultaneously when the following message appears at the bottom of the screen during POST (Power on Self Test).

TO ENTER SETUP PRESS DEL KEY

If the message disappears before you respond and you still want to enter Setup, please restart the system to try it again. Turning the system power OFF and ON, pressing the "RESET" button on the system case or simultaneously pressing <Ctrl>, <Alt>, and <Del> keys can restart the system. If you do not press keys at the right time and the system doesn't boot, an error message will pop out to prompt you the following information:

PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP

5.2 Control Keys

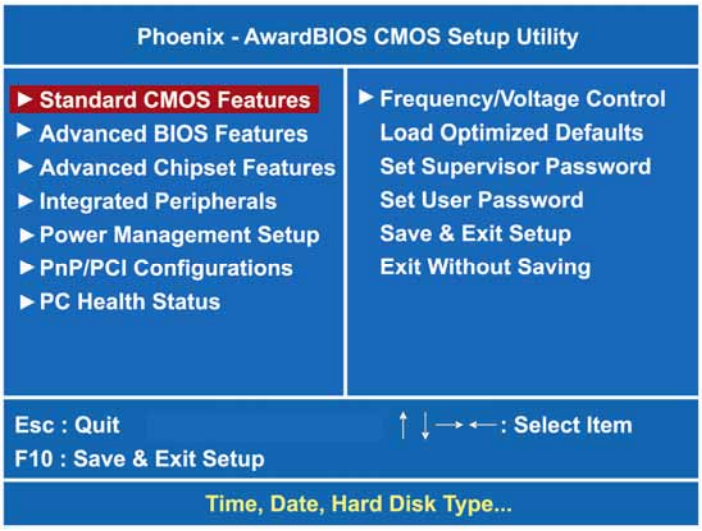
Up arrow	Move cursor to the previous item
Down arrow	Move cursor to the next item
Left arrow	Move cursor to the item on the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quit and delete changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp/"+" key	Increase the numeric value or make changes
PgDn/"–" key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift) F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Reserved
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the Setup default, only for Option Page Setup Menu
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

5.3 Getting Help

- **Main Menu**
  The online description of the highlighted setup function is displayed at the bottom of the screen.
- **Status Page Setup Menu/Option Page Setup Menu**
  Press <F1> to pop out a small Help window that provides the description of using appropriate keys and possible selections for highlighted items. Press <F1> or <Esc> to exit the Help Window.

5.4 The Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu appears on the screen. In the Main Menu, there are several Setup functions and a couple of Exit options for your selection. Use arrow keys to select the Setup Page you intend to configure then press <Enter> to accept or enter its sub-menu.

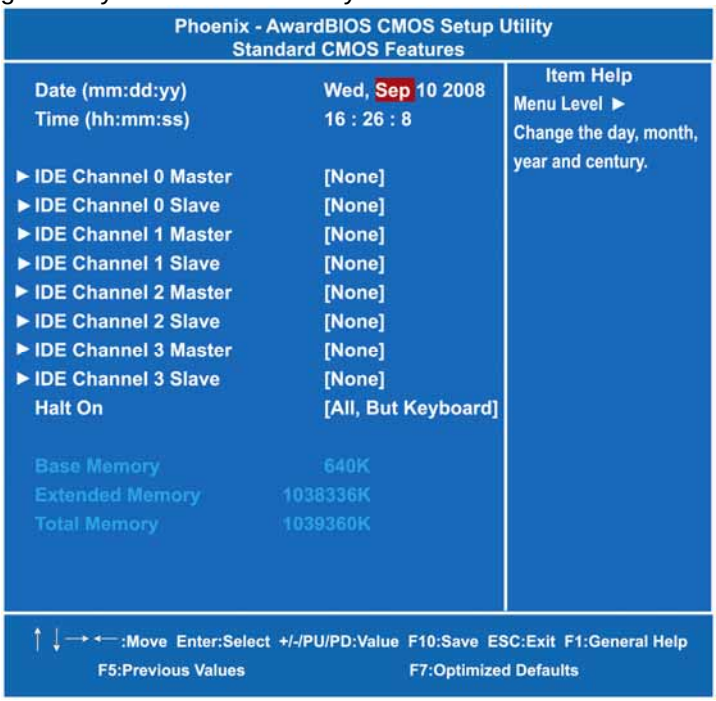


NOTE *If your computer can not boot after making and saving system changes with Setup, the Award BIOS will reset your system to the CMOS default settings via its built-in override feature.*

It is strongly recommended that you should avoid changing the chipset's defaults. Both Award and your system manufacturer have carefully set up these defaults that provide the best performance and reliability.

5.5 Standard CMOS Setup Menu

The Standard CMOS Setup Menu displays basic information about your system. Use arrow keys to highlight each item, and use <PgUp> or <PgDn> key to select the value you want in each item.


Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Item Help
Menu Level ►
Change the day, month, year and century.
Date (mm:dd:yy) Wed, Sep 10 2008
Time (hh:mm:ss) 16 : 26 : 8
► IDE Channel 0 Master [None]
► IDE Channel 0 Slave [None]
► IDE Channel 1 Master [None]
► IDE Channel 1 Slave [None]
► IDE Channel 2 Master [None]
► IDE Channel 2 Slave [None]
► IDE Channel 3 Master [None]
► IDE Channel 3 Slave [None]
Halt On [All, But Keyboard]
Base Memory 640K
Extended Memory 1038336K
Total Memory 1039360K
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

- **Date**
  The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

day	It is determined by the BIOS and read only, from Sunday to Saturday.
date	It can be keyed with the numerical/ function key, from 1 to 31.
month	It is from January to December.
year	It shows the current year of BIOS.

- **Time**
  This item shows current time of your system with the format <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

- **IDE Channel 0/1/2/3 Master/Slave**
  These items identify the types of each IDE channel installed in the computer. There are 45 predefined types (Type 1 to Type 45) and 2 user's definable types (Type User) for Enhanced IDE BIOS. Press <PgUp>/<+> or <PgDn>/<–> to select a numbered hard disk type, or directly type the number and press <Enter>. Please be noted your drive's specifications must match the drive table. The hard disk will not work properly if you enter improper information. If your hard disk drive type does not match or is not listed, you can use Type User to manually define your own drive type.
  If selecting Type User, you will be asked to enter related information in the following items. Directly key in the information and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.
  If the HDD interface controller supports ESDI, select "Type 1".
  If the HDD interface controller supports SCSI, select "None".
  If the HDD interface controller supports CD-ROM, select "None".

CYLS.	number of cylinders	**LANDZONE**	landing zone
HEADS	number of heads	**SECTORS**	number of sectors
PRECOMP	write precom	**MODE**	HDD access mode

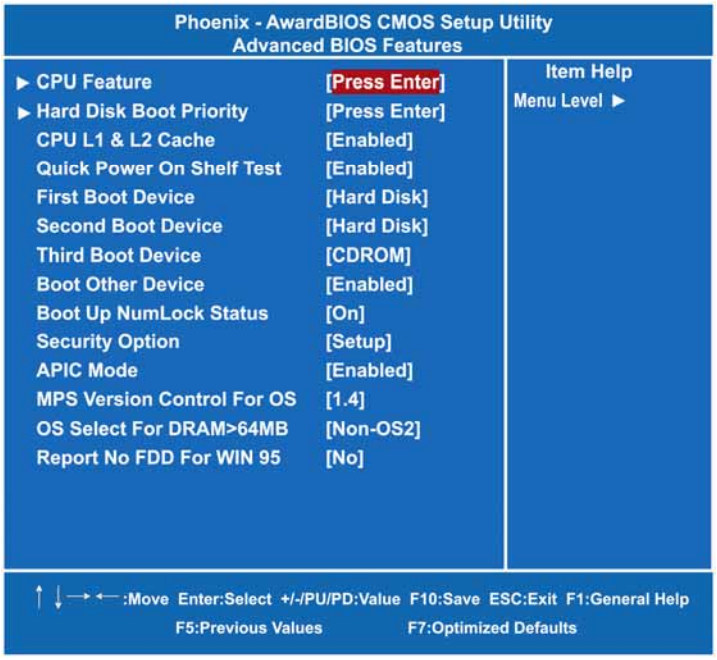
  If there is no hard disk drive installed, select NONE and press <Enter>.
- **Halt On**
  This item determines whether the system will halt or not, if an error is detected while powering up.

No errors	The system booting will halt on any errors detected. (default)
All errors	Whenever BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system booting will not stop for a keyboard error; it will stop for other errors.
All, But Diskette	The system booting will not stop for a disk error; it will stop for other errors.
All, But Disk/Key	The system booting will not stop for a keyboard or disk error; it will stop for other errors.

Press <Esc> to return to the Main Menu page.

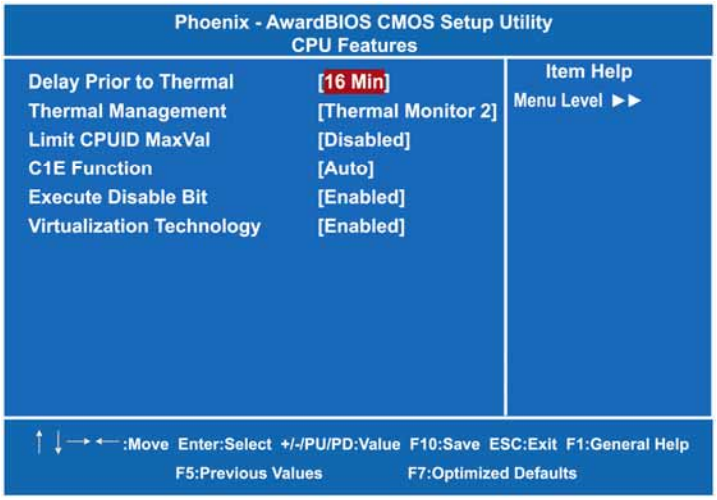
5.6 Advanced BIOS Features

This section allows you to configure and improve your system, to set up some system features according to your preference.


Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features
▶ CPU Feature [Press Enter]
▶ Hard Disk Boot Priority [Press Enter]
CPU L1 & L2 Cache [Enabled]
Quick Power On Shelf Test [Enabled]
First Boot Device [Hard Disk]
Second Boot Device [Hard Disk]
Third Boot Device [CDROM]
Boot Other Device [Enabled]
Boot Up NumLock Status [On]
Security Option [Setup]
APIC Mode [Enabled]
MPS Version Control For OS [1.4]
OS Select For DRAM>64MB [Non-OS2]
Report No FDD For WIN 95 [No]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

- **CPU Feature**

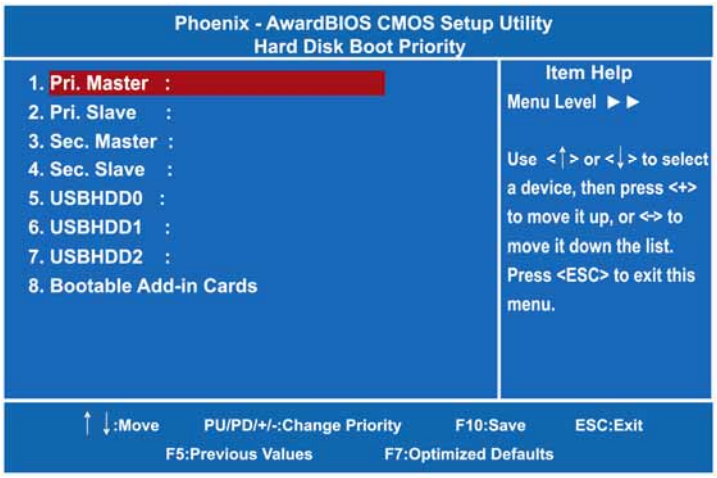
  Scroll to this item and press <Enter> to view the CPU Feature sub menu.



  - **Delay prior to Thermal**
    This filed is used to select the time that would force the CPU to a 50% duty cycle when it exceeds its maximum operating temperature therefore protecting the CPU and the system board from overheating to ensure a safe computing environment.
  - **Thermal Management**
    Thermal Monitor 1 On-die throttling
    Thermal Monitor 2 Ratio and VID transition
  - **Limit CPUID MaxVal**
    The CPUID instruction if some newer CPUs will return a value greater than 3. The default is "*Disabled*", because this problem does not exist in the Windows series operating systems. If you are using an operating system other than Windows, this problem may occur. To avoid this problem, you can enable this field to limit the return value to 3 or lesser than 3.

Press <Esc> to return to the Advanced BIOS Features page.

- **Hard Disk Boot Priority**
  Scroll to this item and press <Enter> to view the sub menu to decide the disk boot priority.



Press <Esc> to return to the Advanced BIOS Features page.

- **CPU L1 & L2 Cache**
  These two options speed up memory access. However, it depends on the CPU/chipset design. The default setting is "Enabled". CPUs without built-in internal cache will not provide the "CPU Internal Cache" item on the menu.

Enabled	Enable cache
Disabled	Disable cache

- **Quick Power On Self Test**
  This option speeds up Power on Self Test (POST) after you turn on the system power. If set as Enabled, BIOS will shorten or skip some check items during POST. The default setting is "Enabled".

Enabled	Enable Quick POST
Disabled	Normal POST

- **First/Second/Third Boot Device**
  These items let you select the 1st, 2nd, and 3rd devices that the system will search for during its boot-up sequence. There is a wide range of options for your selection.

- **Boot Other Device**
  This item allows the user to enable/disable the boot device not listed on the First/Second/Third boot devices option above. The default setting is "*Enabled"*.

- **Boot Up NumLock Status**
  Set the the Num Lock status when the system is powered on. The default value is *"On"*.

- **Security Option**
  This item allows you to limit access to the system and Setup, or just to Setup. The default value is *"Setup"*.

System	If a wrong password is entered at the prompt, the system will not boot, the access to Setup will be denied, either.
Setup	If a wrong password is entered at the prompt, the system will boot, but the access to Setup will be denied.

NOTE *To disable the security, select PASSWORD SETTING at Main Menu and then you will be asked to enter a password. Do not type anything, just press <Enter> and it will disable the security. Once the security is disabled, the system will boot and you can enter Setup freely.*

- **APIC Mode**
  Use this item to enable or disable APIC (Advanced Programmable Interrupt Controller) mode that provides symmetric multi-processing (SMP) for systems.

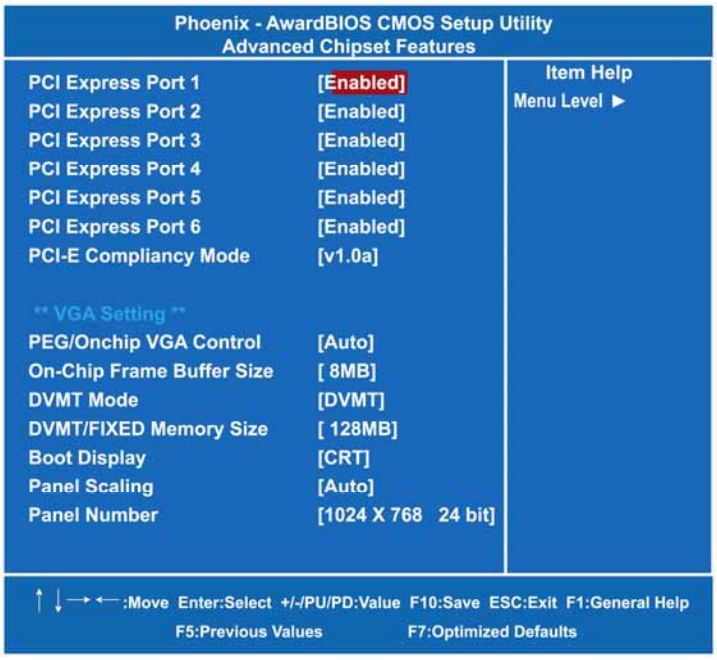
- **MPS Version Control For OS**
  This item specifies the version of the Multiprocessor Specification (MPS). Version 1.4 has extended configuration tables to improve support for multiple PCI bus configurations and provide future expandability.

- **OS Select for DRAM >64MB**
  This item allows you to access the memory over 64MB in OS/2.
- **Report No FDD For WIN 95**
  Select Yes to release an IRQ when the system doesn't have any floppy drive, for compatibility with Windows 95 logo certification. In the Integrated Peripherals screen, select Disabled for the Onboard FDC Controller field.

Press <Esc> to return to the Main Menu page.

5.7 Advanced Chipset Features

This section contains completely optimized chipset's features on the board that you are strongly recommended to leave all items on this page at their default values unless you are very familiar with the technical specifications of your system hardware.


Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features
PCI Express Port 1 [Enabled]
PCI Express Port 2 [Enabled]
PCI Express Port 3 [Enabled]
PCI Express Port 4 [Enabled]
PCI Express Port 5 [Enabled]
PCI Express Port 6 [Enabled]
PCI-E Compliancy Mode [v1.0a]
** VGA Setting **
PEG/Onchip VGA Control [Auto]
On-Chip Frame Buffer Size [8MB]
DVMT Mode [DVMT]
DVMT/FIXED Memory Size [128MB]
Boot Display [CRT]
Panel Scaling [Auto]
Panel Number [1024 X 768 24 bit]
Item Help
Menu Level ►
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

- **PCI-E Compliancy Mode**
  This item allows users to set the version of the PCI Express based on the specification by which the motherboard has to comply.

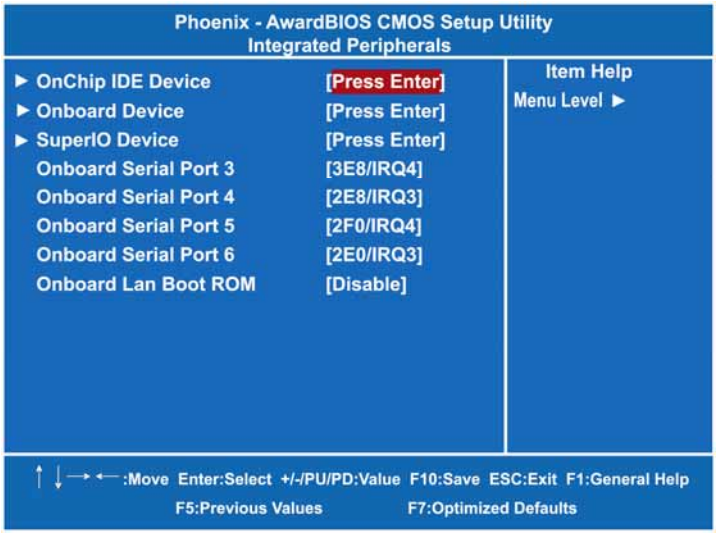
***** VGA Setting *****

- **PEG/Onchip VGA Control**
  Use this item to choose the primary display card.
- **On-Chip Frame Buffer Size**
  Use this item to set the VGA frame buffer size.
- **DVMT Mode**
  DVMT (Dynamic Video Memory Technology) helps you select the video mode.
- **DVMT/Fixed Memory Size**
  DVMT (Dynamic Video Memory Technology) allows you to select a maximum size of dynamic amount usage of the video memory. The system would configure the video memory dependent on your application.
- **Boot Display**
  This item is to select Display Device that the screen will be shown.
- **Panel Scaling**
  This item shows the setting of panel scaling and operates the scaling function that the panel output can fit the screen resolution connected to the output port.
- **Panel Number**
  This item is to select panel resolution that you want.

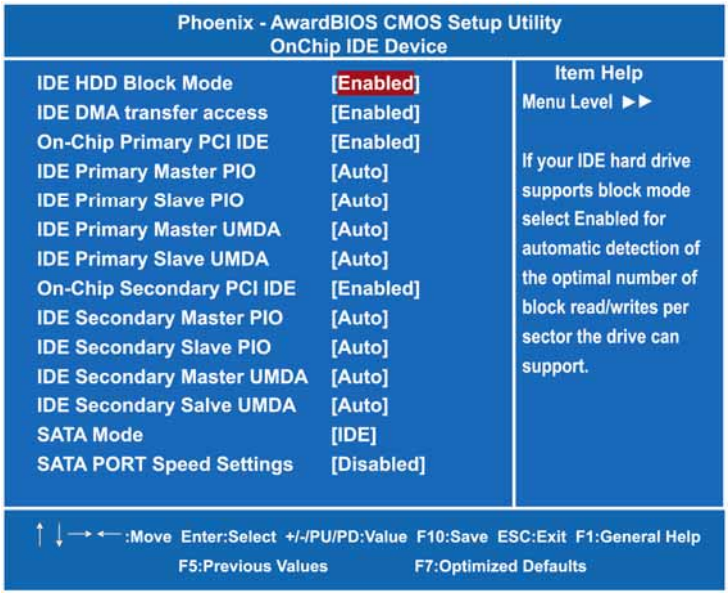
Press <Esc> to return to the Main Menu page.

5.8 Integrated Peripherals

This section allows you to configure your OnChip IDE Device, Onboard Device and SuperIO Device.


Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals
► OnChip IDE Device [Press Enter]
► Onboard Device [Press Enter]
► SuperIO Device [Press Enter]
Onboard Serial Port 3 [3E8/IRQ4]
Onboard Serial Port 4 [2E8/IRQ3]
Onboard Serial Port 5 [2F0/IRQ4]
Onboard Serial Port 6 [2E0/IRQ3]
Onboard Lan Boot ROM [Disable]
Item Help
Menu Level ►
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

- **OnChip IDE Device**
  Scroll to this item and press <Enter> to view the sub menu OnChip IDE Device.


Phoenix - AwardBIOS CMOS Setup Utility
OnChip IDE Device
IDE HDD Block Mode [Enabled]
IDE DMA transfer access [Enabled]
On-Chip Primary PCI IDE [Enabled]
IDE Primary Master PIO [Auto]
IDE Primary Slave PIO [Auto]
IDE Primary Master UMDA [Auto]
IDE Primary Slave UMDA [Auto]
On-Chip Secondary PCI IDE [Enabled]
IDE Secondary Master PIO [Auto]
IDE Secondary Slave PIO [Auto]
IDE Secondary Master UMDA [Auto]
IDE Secondary Salve UMDA [Auto]
SATA Mode [IDE]
SATA PORT Speed Settings [Disabled]
Item Help
Menu Level ►►
If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.
↑ ↓ → ←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

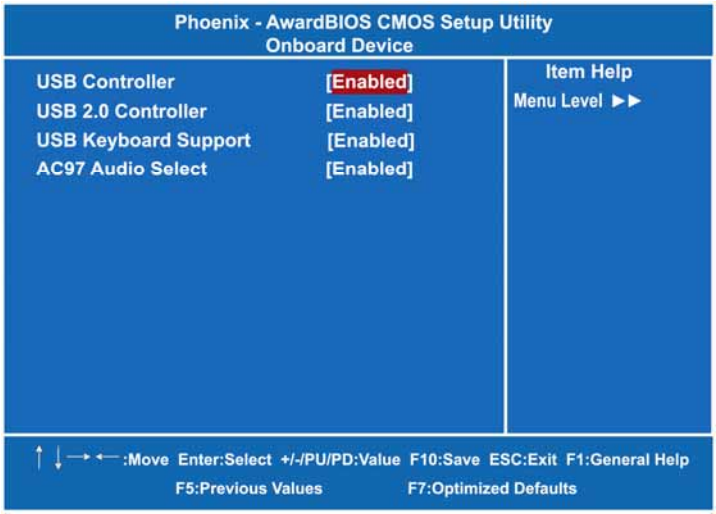
  - **IDE HDD Block Mode**
    Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.
  - **IDE DMA transfer access**
    Automatic data transfer between system memory and IDE device with minimum CPU intervention. This improves data throughput and frees CPU to perform other tasks.
  - **On-Chip Primary/Secondary PCI IDE**
    The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately. The default value is *"Enabled"*.

    NOTE *Choosing Disabled for these options will automatically remove the IDE Primary Master/ Slave PIO and/or IDE Secondary Master/Slave PIO items on the menu.*

- **IDE Primary/Secondary Master/Slave PIO**
  The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 to 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.
- **IDE Primary/Secondary Master/Slave UDMA**
  Select the mode of operation for the IDE drive. Ultra DMA-33/66/100/133 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver. If your hard drive and system software both support Ultra DMA-33/66/100/133, select Auto to enable UDMA mode by BIOS.
- **SATA Mode**
  There are these options for you to set up SATA mode: IDE or RAID.
- **SATA PORT Speed Settings**
  Use this item to select SATA I or SATA II device support forcedly.

Press <Esc> to return to the Integrated Peripherals page.

- **Onboard Device**
  Scroll to this item and press <Enter> to view the sub menu Onboard Device.

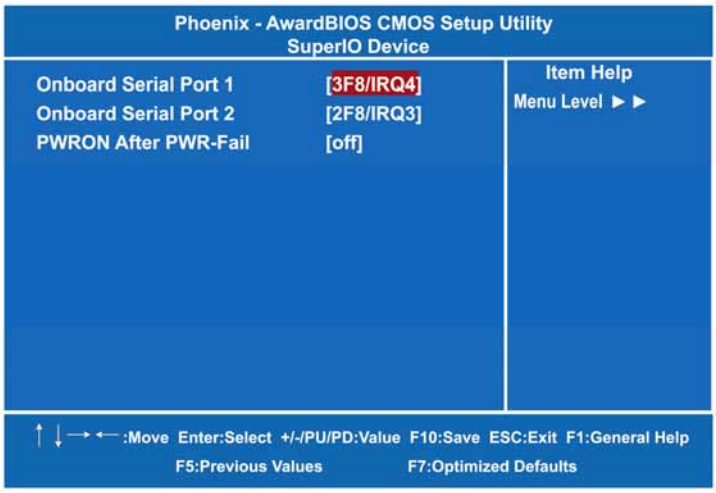


  - **USB Controller**
    Enable this item if you are using the USB in the system. You should disable this item if a higher-level controller is added.
  - **USB 2.0 Controller**
    Enable this item if you are using the EHCI (USB2.0) controller in the system.
  - **USB Keyboard Support**
    Enable this item if the system has a Universal Serial Bus (USB) controller, and you have a USB keyboard.
  - **AC97 Audio Select**
    Use this item to enable or disable the onboard AC97 Audio function.

Press <Esc> to return to the Integrated Peripherals page.

- **Super IO Device**

  Scroll to this item and press <Enter> to view the sub menu Super IO Device.


Phoenix - AwardBIOS CMOS Setup Utility
SuperIO Device
Onboard Serial Port 1 [3F8/IRQ4]
Onboard Serial Port 2 [2F8/IRQ3]
PWRON After PWR-Fail [off]
Item Help
Menu Level ► ►
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

  - **Onboard Serial Port 1/2**
    Select an address and corresponding interrupt for the serial port.
  - **PWRON After PWR-Fail**
    This item enables your computer to automatically restart or return to its operating status.

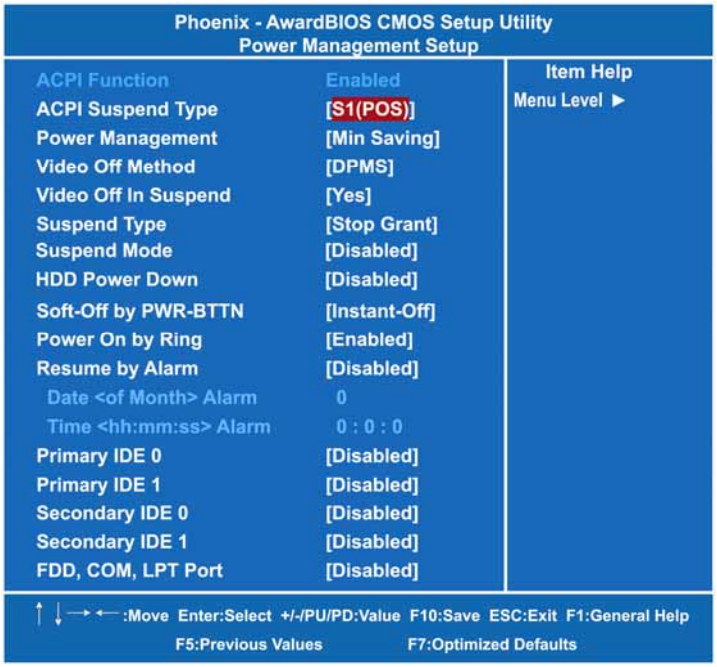
Press <Esc> to return to the Integrated Peripherals page.

- **Onboard Serial Port 3/4/5/6**
  Select an address and corresponding interrupt for the serial port.
- **Onboard Lan Boot ROM**
  Use this item to enable or disable the Boot ROM function of the onboard LAN chip when the system boots up.

Press <Esc> to return to the Main Menu page.

5.9 Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn OFF video display after a period of inactivity.


Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup
ACPI Function Enabled
ACPI Suspend Type [S1(POS)]
Power Management [Min Saving]
Video Off Method [DPMS]
Video Off In Suspend [Yes]
Suspend Type [Stop Grant]
Suspend Mode [Disabled]
HDD Power Down [Disabled]
Soft-Off by PWR-BTTN [Instant-Off]
Power On by Ring [Enabled]
Resume by Alarm [Disabled]
Date <of Month> Alarm 0
Time <hh:mm:ss> Alarm 0 : 0 : 0
Primary IDE 0 [Disabled]
Primary IDE 1 [Disabled]
Secondary IDE 0 [Disabled]
Secondary IDE 1 [Disabled]
FDD, COM, LPT Port [Disabled]
Item Help
Menu Level ►
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

- **ACPI Function**
  This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The function is always "*Enabled*".
- **ACPI Suspend Type**
  This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME and Windows 2000, you can choose to enter the Standby mode in S1 (POS) or S3 (STR) fashion through the setting of this field. Options are:

  [S1(POS)] The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system context.

  [S3(STR)] The S3 sleep mode is a lower power state where

the information of system configuration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when a "wake up" event occurs.

- **Power Management**
  This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes. The table below describes each power management mode:

Max Saving	It is maximum power savings, only available for SL CPUs. The inactivity period is 1 minute in each mode.
User Define	It sets each mode. Select time-out periods in the PM Timers section.
Min Saving	It is minimum power savings. The inactivity period is 1 hour in each mode (except the hard drive).
Disabled	Default value

- **Video Off Method**
  This setting determines the manner in which the monitor is blanked.

V/H SYNC+Blank	Turns OFF vertical and horizontal synchronization ports and writes blanks to the video buffer
DPMS	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the software supplied for your video subsystem to select video power management values.
Blank Screen	System only writes blanks to the video buffer.

- **Video Off In Suspend**
  This item defines if the video is powered down when the system is put into suspend mode.

- **Suspend Type**
  If this item is set to the default Stop Grant, the CPU will go into Idle Mode during power saving mode.

- **Suspend Mode**
  After the selected period of system inactivity (1 minute to 1 hour), all devices except the CPU shut off. The default value is *"Disabled"*.

Disabled	System will never enter SUSPEND mode
1/2/4/6/8/10/20/30/40 Min/1 Hr	Defines the continuous idle time before the system entering SUSPEND mode. If any item defined in (J) is enabled & active, SUSPEND timer will be reloaded

- **HDD Power Down**
  If HDD activity is not detected for the length of time specified in this field, the hard disk drive will be powered down while all other devices remain active.

- **Soft-Off by PWR-BTTN**
  This option only works with systems using an ATX power supply. It also allows the user to define which type of soft power OFF sequence the system will follow. The default value is "Instant-Off".

Instant-Off	This option follows the conventional manner systems perform when power is turned OFF. Instant-Off is a soft power OFF sequence requiring only the switching of the power supply button to OFF
Delay 4 Sec.	Upon turning OFF system from the power switch, this option will delay the complete system power OFF sequence by approximately 4 seconds. Within this delay period, system will temporarily enter into Suspend Mode enabling you to restart the system at once.

- **Power On by Ring**
  This option allows the system to resume or wake up upon detecting any ring signals coming from an installed modem. The default value is *"Enabled"*.

- **Resume by Alarm**
  If enable this item, the system can automatically resume after a fixed time in accordance with the system's RTC (realtime clock).

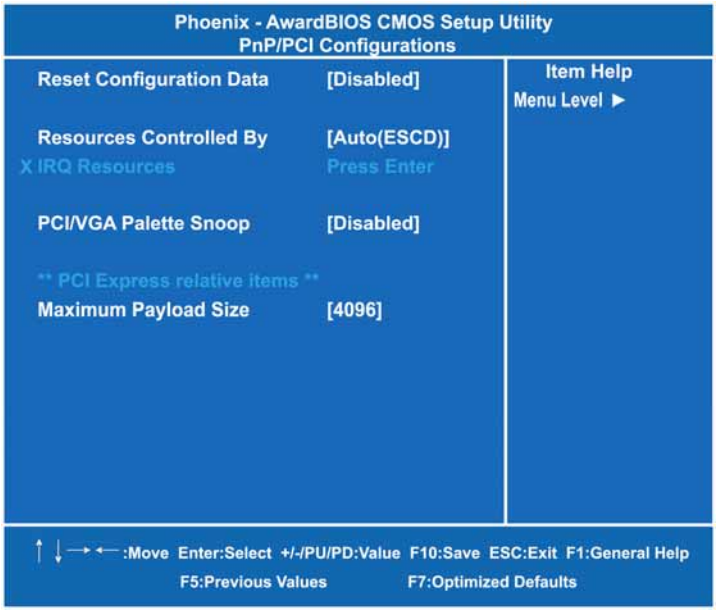
- **Primary/Secondary IDE 0/1**
  Use this item to configure the IDE devices monitored by the system.

- **FDD, COM, LPT Port**
  Use this item to configure the FDD, COM and LPT ports monitored by the system.

Press <Esc> to return to the Main Menu page.

5.10 PnP/PCI Configuration Setup

This section describes the configuration of PCI (Personal Computer Interconnect) bus system, which allows I/O devices to operate at speeds close to the CPU speed while communicating with other important components. This section covers very technical items that only experienced users could change default settings.


Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations
Reset Configuration Data [Disabled]
Resources Controlled By [Auto(ESCD)]
X IRQ Resources Press Enter
PCI/VGA Palette Snoop [Disabled]
** PCI Express relative items **
Maximum Payload Size [4096]
Item Help
Menu Level ►
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

- **Reset Configuration Data**
  Normally, you leave this item Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup or if installing a new add-on cause the system reconfiguration a serious conflict that the operating system can not boot. Options: Enabled, Disabled.
- **Resources Controlled By**
  The Award Plug and Play BIOS can automatically configure all boot and Plug and Play-compatible devices. If you select Auto, all interrupt request (IRQ), DMA assignment, and Used DMA fields disappear, as the BIOS automatically assigns them. The default value is *"Manual"*.
- **IRQ Resources**
  When resources are controlled manually, assign each system

interrupt to one of the following types in accordance with the type of devices using the interrupt:

1. Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).
2. PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

The default value is *"PCI/ISA PnP"*.

- **PCI/VGA Palette Snoop**
  Some non-standard VGA display cards may not show colors properly. This item allows you to set whether MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card; when disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.

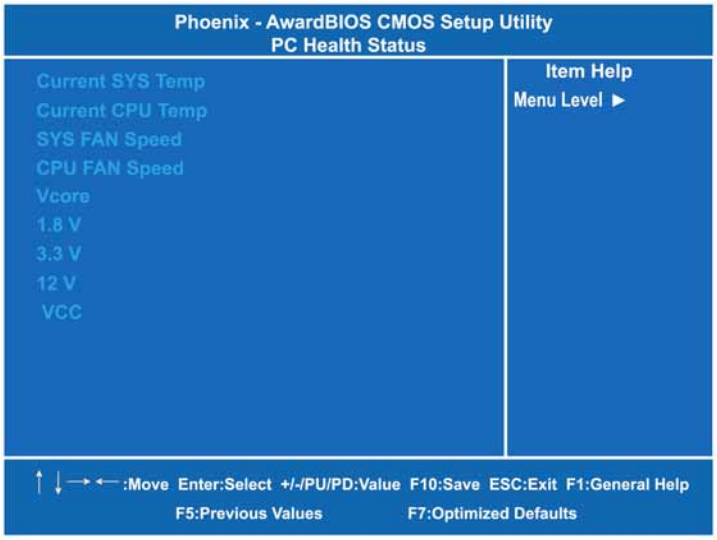
**** PCI Express relative items ****

- **Maximum Payload Size**
  When using DDR SDRAM and Buffer size selection, another consideration in designing a payload memory is the size of the buffer for data storage. Maximum Payload Size defines the maximum TLP (Transaction Layer Packet) data payload size for the device.

Press <Esc> to return to the Main Menu page.

5.11 PC Health Status

This section supports hardware monitering that lets you monitor those parameters for critical voltages, temperatures and fan speed of the board.

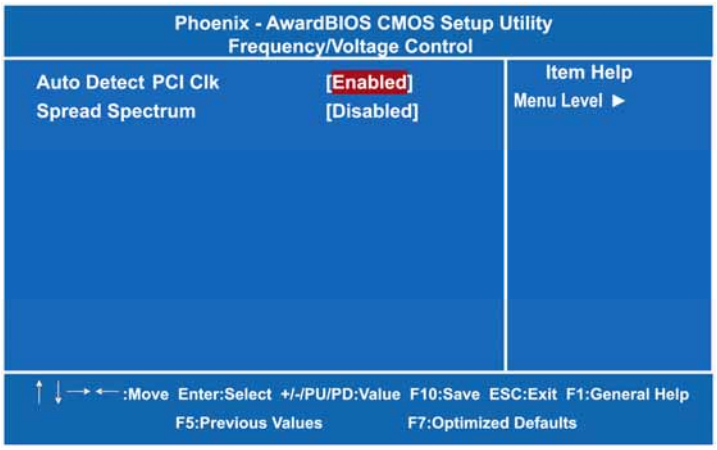


- **Current SYSTEM Temperature**
  Show you the current system temperature.
- **Current CPU Temperature**
  These read-only fields show the functions of the hardware thermal sensor by CPU thermal diode that monitors the chip blocks to ensure a stable system.
- **Vcore/1.8V/3.3V/12V/VCC**
  Show you the voltage of Vcore/1.8V/3.3V/12V/VCC.

Press <Esc> to return to the Main Menu page.

5.12 Frequency/Voltage Control

This section is to control the CPU frequency and Supply Voltage, DIMM OverVoltage and AGP voltage.

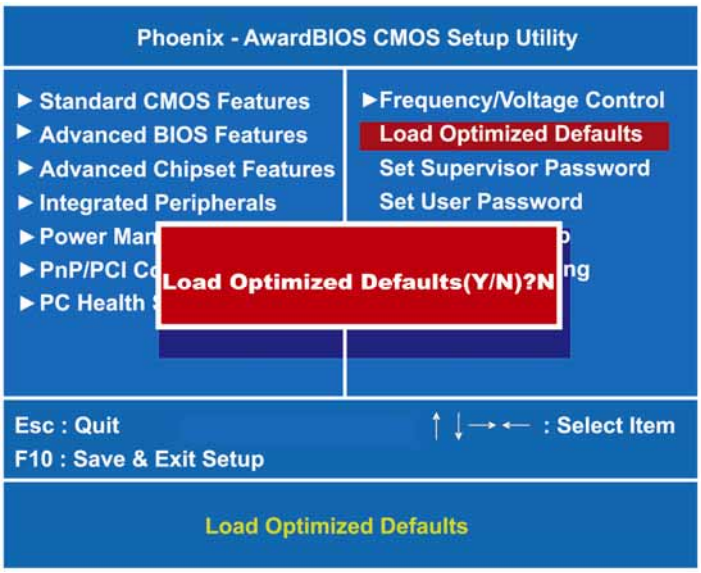


- **Auto Detect PCI Clk**
  The enabled item can automatically disable the clock source for a PCI slot without a module, to reduce EMI (ElectroMagnetic Interference).
- **Spread Spectrum**
  If spread spectrum is enabled, EMI (ElectroMagnetic Interference) generated by the system can be significantly reduced.

Press <Esc> to return to the Main Menu page.

5.13 Load Optimized Defaults

This option allows you to load your system configuration with default values. These default settings are optimized to enable high performance features.



To load CMOS SRAM with SETUP default values, please enter "Y". If not, please enter "N".

5.14 Set Supervisor/User Password

You can set a supervisor or user password, or both of them. The differences between them are:

1. **Supervisor password:** You can enter and change the options on the setup menu.
2. **User password:** You can just enter, but have no right to change the options on the setup menu.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type a maximum eight-character password, and press <Enter>. This typed password will clear previously entered password from the CMOS memory. You will be asked to confirm this password. Type this password again and press <Enter>. You may also press <Esc> to abort this selection and not enter a password.

To disable the password, just press <Enter> when you are prompted to enter a password. A message will confirm the password is getting disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED

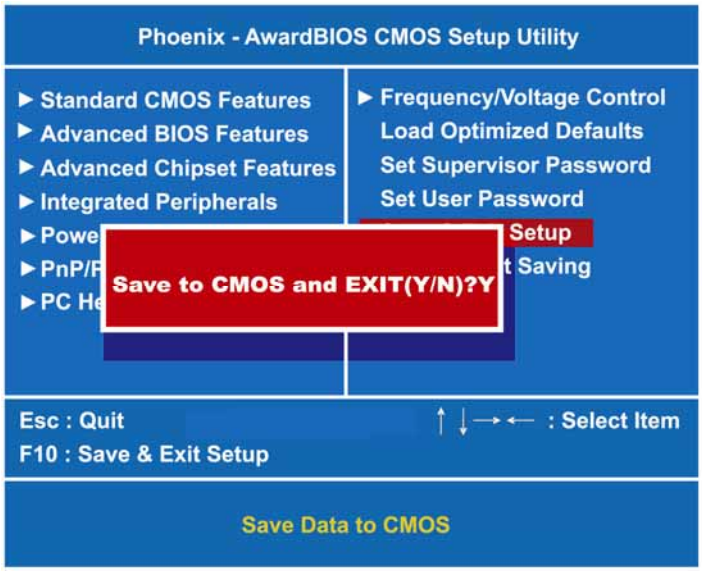
When a password is enabled, you have to type it every time you enter the Setup. It prevents any unauthorized persons from changing your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time the system reboots. This would prevent unauthorized use of your computer.

You decide when the password is required for the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password is required during booting up and entry into the Setup; if it is set as "Setup", a prompt will only appear before entering the Setup.

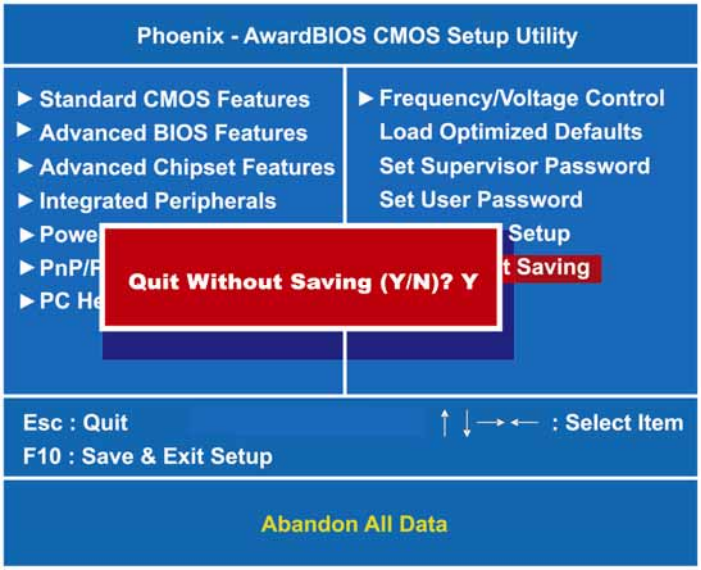
5.15 Save & Exit Setup

This section allows you to determine whether or not to accept your modifications. Type "Y" to quit the setup utility and save all changes into the CMOS memory. Type "N" to bring you back to the Setup utility.



5.16 Exit Without Saving

Select this option to exit the Setup utility without saving changes you have made in this session. Type "Y", and it will quit the Setup utility without saving your modifications. Type "N" to return to the Setup utility.



MEMO

APPENDIX A
WATCHDOG TIMER

Watchdog Timer Setting

After the system stops working for a while, it can be auto-reset by the Watchdog Timer. The integrated Watchdog Timer can be set up in the system reset mode by program.

Using the Watchdog Function

Start
↓
Un-Lock WDT:
O 2E 87 ; Un-lock super I/O
O 2E 87 ; Un-lock super I/O
↓
Select Logic device:
O 2E 07
O 2F 08
↓
Activate WDT:
O 2E 30
O 2F 01
↓
Set Second or Minute :
O 2E F5
O 2F N N=00 or 08 (Note#)
↓
Set base timer :
O 2E F6
O 2F M=00,01,02,…FF(Hex) ,Value=0 to 255
↓

WDT counting re-set timer :
O 2E F6
O 2F M ; M=00,01,02,…FF

; IF to disable WDT:

O 2E 30
O 2F 00 ; Can be disable at any time

- Timeout Value Range
  - 1 to 255
  - Minute / Second
- Program Sample

2E, 87	
2E, 87	
2E, 07	
2F, 08	Logical Device 8
2E, 30	Activate
2F, 01	
2E, F5	
2F, N	Set Minute or Second N=08 (Min),00(Sec)
2E, F6	
2F, M	Set Value M = 00 ~ FF

Note#:

N=00
M= 00h: Time-out Disable
01h: Time-out occurs after 1 second
02h: Time-out occurs after 2 second
03h: Time-out occurs after 3 second
…….....
FFh: Time-out occurs after 255 second

N=08
M= 00h: Time-out Disable
01h: Time-out occurs after 1 minute
02h: Time-out occurs after 2 minutes
03h: Time-out occurs after 3 minutes
…….....
FFh: Time-out occurs after 255 minutes

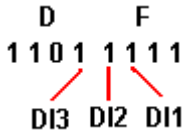
APPENDIX B
DIGITAL I/O

Digital I/O Software Programming

- GPI program sample:

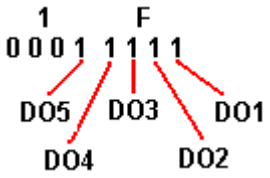
I 042A	Read DI1~DI3 Status

You can get a default value is "DF".



- GPO program sample:

O 2E 87	
O 2E 87	
O 2E 07	
O 2F 08	Select Device 8
O 2E 30	
O 2F 04	Set GPIO6
O 2E E4	
O 2F 00	GPIO6 pins are programmed as output pins.
O 2E E5	
O 2F 00	Clear Data Register
O 2E E6	
O 2F N	Set DO1~DO5 Status N = 00 ~ 1F


1
F
0 0 0 1 1 1 1 1
DO5
DO3
DO1
DO4
DO2

APPENDIX C
CONFIGURING SATA FOR RAID FUNCTION

Configuring SATA Hard Drive(s) for RAID Function (Controller: Intel® ICH7R only)

Please follow up the steps below to configure SATA hard drive(s):

(1) Install SATA hard drive(s) in your system.
(2) Enter the BIOS Setup to configure SATA controller mode and boot sequence.
(3) Configure RAID by the RAID BIOS.
(4) Create a floppy disk for the SATA controller driver.
(5) Install the SATA controller driver during the OS installation.

Before you begin the SATA configuration, please prepare:
(a) Two SATA hard drives (to ensure optimal performance, it is recommended that you use two hard drives with identical model and capacity).
(b) An empty formatted floppy disk
(c) Windows XP setup disk

(1) Installing SATA hard drive(s) in your system

Connect one end of the SATA signal cable to the rear of the SATA hard drive, and the other end to available SATA port(s) on the board. Then, connect the power connector of power supply to the hard drive.

(2) Configuring SATA controller mode and boot sequence by the BIOS Setup

You have to make sure whether the SATA controller is configured correctly by system BIOS Setup and set up BIOS boot sequence for the SATA hard drive(s).

(2)-1 Turn on your system and press the Del button to enter BIOS Setup during running POST (Power-On Self Test). If you want to create RAID, just select **RAID** for **SATA Mode** (default **IDE**) under the **Integrated Peripherals** menu.

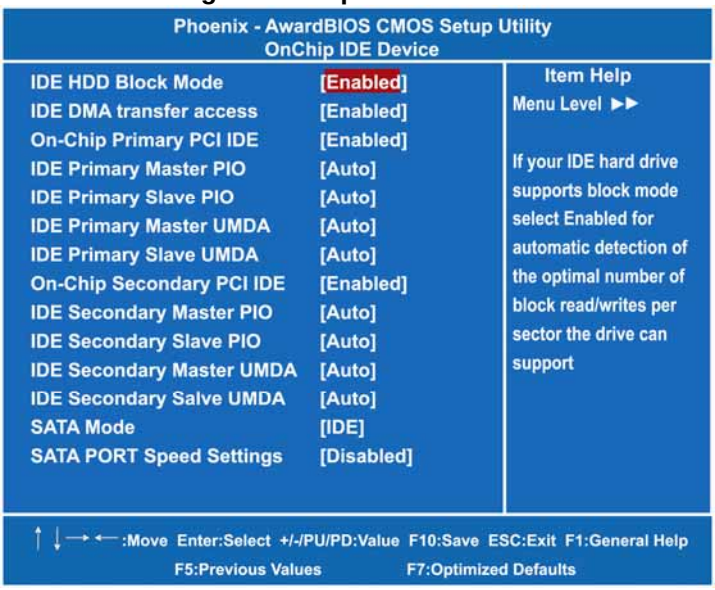

Phoenix - AwardBIOS CMOS Setup Utility
OnChip IDE Device
IDE HDD Block Mode [Enabled]
IDE DMA transfer access [Enabled]
On-Chip Primary PCI IDE [Enabled]
IDE Primary Master PIO [Auto]
IDE Primary Slave PIO [Auto]
IDE Primary Master UMDA [Auto]
IDE Primary Slave UMDA [Auto]
On-Chip Secondary PCI IDE [Enabled]
IDE Secondary Master PIO [Auto]
IDE Secondary Slave PIO [Auto]
IDE Secondary Master UMDA [Auto]
IDE Secondary Salve UMDA [Auto]
SATA Mode [IDE]
SATA PORT Speed Settings [Disabled]
Item Help
Menu Level ▶▶
If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support
↑ ↓ → ← :Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

Figure 1

(2)-2 Set **CDROM** for **First Boot Device** under the **Advanced BIOS Features** menu to boot CD-ROM after system restarts (Figure 2).

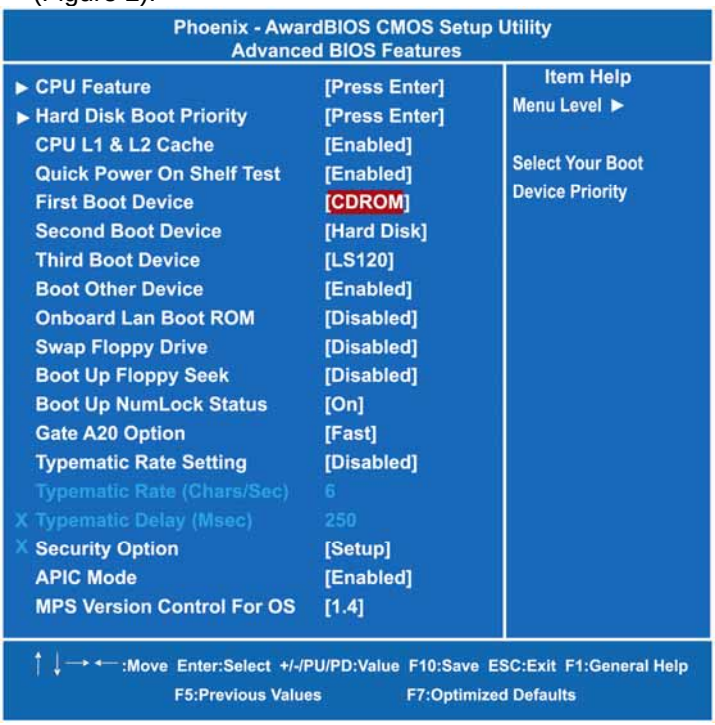

Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features
▶ CPU Feature [Press Enter]
▶ Hard Disk Boot Priority [Press Enter]
CPU L1 & L2 Cache [Enabled]
Quick Power On Shelf Test [Enabled]
First Boot Device [CDROM]
Second Boot Device [Hard Disk]
Third Boot Device [LS120]
Boot Other Device [Enabled]
Onboard Lan Boot ROM [Disabled]
Swap Floppy Drive [Disabled]
Boot Up Floppy Seek [Disabled]
Boot Up NumLock Status [On]
Gate A20 Option [Fast]
Typematic Rate Setting [Disabled]
Typematic Rate (Chars/Sec) 6
X Typematic Delay (Msec) 250
X Security Option [Setup]
APIC Mode [Enabled]
MPS Version Control For OS [1.4]
Item Help
Menu Level ▶
Select Your Boot Device Priority
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

Figure 2

(2)-3 Save and exit the BIOS Setup.

(3) Configuring RAID by the RAID BIOS

Enter the RAID BIOS setup utility to configure a RAID array.

(3)-1 After the POST memory testing and before the operating system booting, a message "*Press <Ctrl-I> to enter Configuration Utility*" (as Figure 3) shows up, accordingly, press <CTRL+ I> to enter the RAID BIOS setup utility.

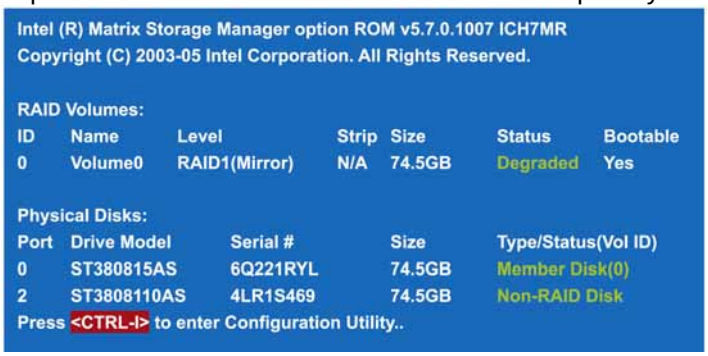

Intel (R) Matrix Storage Manager option ROM v5.7.0.1007 ICH7MR
Copyright (C) 2003-05 Intel Corporation. All Rights Reserved.
RAID Volumes:
ID Name Level Strip Size Status Bootable
0 Volume0 RAID1(Mirror) N/A 74.5GB Degraded Yes
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
0 ST380815AS 6Q221RYL 74.5GB Member Disk(0)
2 ST3808110AS 4LR1S469 74.5GB Non-RAID Disk
Press <CTRL-I> to enter Configuration Utility..

Figure 3

(3)-2 After you press <CTRL+ I>, the **Create RAID Volume** screen will appear (as Figure 4). If you want to create a RAID array, select the **Create RAID Volume** option in the Main Menu and press ENTER.

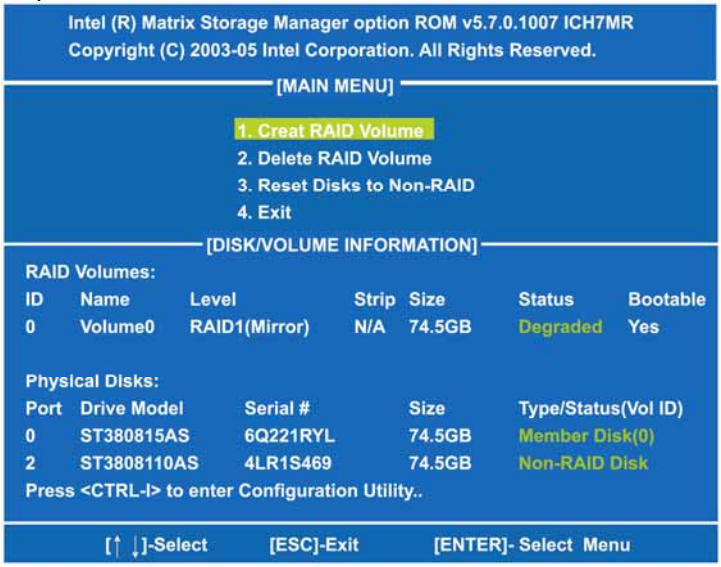

Intel (R) Matrix Storage Manager option ROM v5.7.0.1007 ICH7MR
Copyright (C) 2003-05 Intel Corporation. All Rights Reserved.
[MAIN MENU]
1. Creat RAID Volume
2. Delete RAID Volume
3. Reset Disks to Non-RAID
4. Exit
[DISK/VOLUME INFORMATION]
RAID Volumes:
ID Name Level Strip Size Status Bootable
0 Volume0 RAID1(Mirror) N/A 74.5GB Degraded Yes
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
0 ST380815AS 6Q221RYL 74.5GB Member Disk(0)
2 ST3808110AS 4LR1S469 74.5GB Non-RAID Disk
Press <CTRL-I> to enter Configuration Utility..
[↑ ↓]-Select [ESC]-Exit [ENTER]- Select Menu

Figure 4

(3)-3 After entering the **CREAT VOLUME MENU** screen, you can type the disk array name with 1~16 letters (letters cannot be special characters) in the item "Name". When finished, press ENTER to select a RAID level (as Figure 5). There are two RAID levels, RAID0 and RAID1. Select a RAID level and press ENTER.

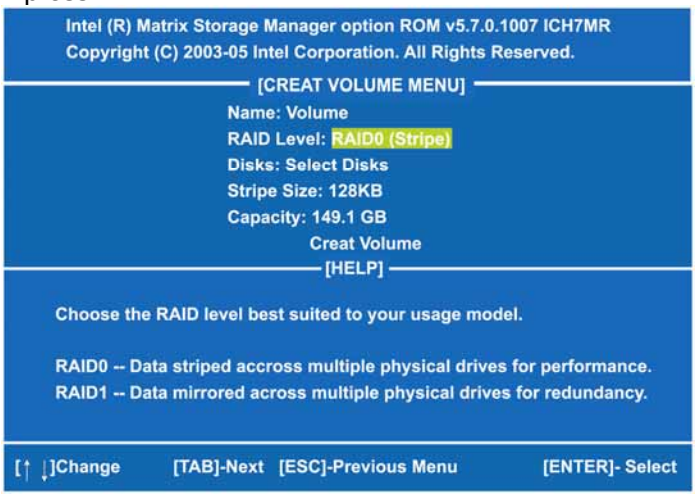

Intel (R) Matrix Storage Manager option ROM v5.7.0.1007 ICH7MR
Copyright (C) 2003-05 Intel Corporation. All Rights Reserved.
[CREAT VOLUME MENU]
Name: Volume
RAID Level: RAID0 (Stripe)
Disks: Select Disks
Stripe Size: 128KB
Capacity: 149.1 GB
Creat Volume
[HELP]
Choose the RAID level best suited to your usage model.
RAID0 -- Data striped accross multiple physical drives for performance.
RAID1 -- Data mirrored across multiple physical drives for redundancy.
[↑ ↓]Change [TAB]-Next [ESC]-Previous Menu [ENTER]- Select

Figure 5

(3)-4 Set the stripe block size (as Figure 6). The *KB* is the standard unit of stripe block size. The stripe block size can be 4KB to 128KB. After the setting, press ENTER for the array capacity.

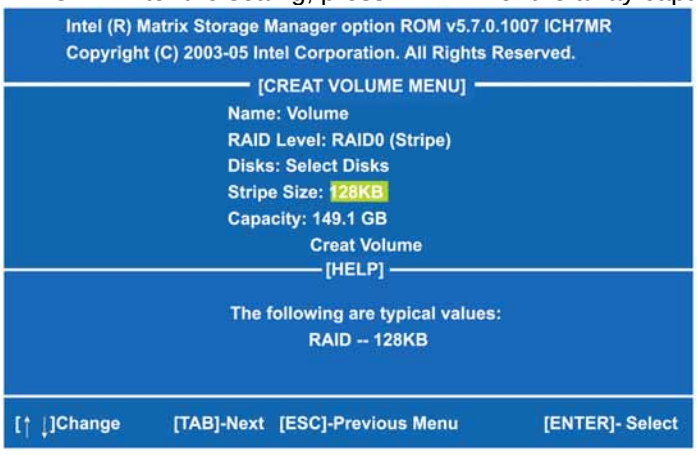

Intel (R) Matrix Storage Manager option ROM v5.7.0.1007 ICH7MR
Copyright (C) 2003-05 Intel Corporation. All Rights Reserved.
[CREAT VOLUME MENU]
Name: Volume
RAID Level: RAID0 (Stripe)
Disks: Select Disks
Stripe Size: 128KB
Capacity: 149.1 GB
Creat Volume
[HELP]
The following are typical values:
RAID -- 128KB
[↑ ↓]Change [TAB]-Next [ESC]-Previous Menu [ENTER]- Select

Figure 6

(3)-5 After setting all the items on the menu, select **Create Volume** and press ENTER (as Figure 7) to start creating the RAID array.

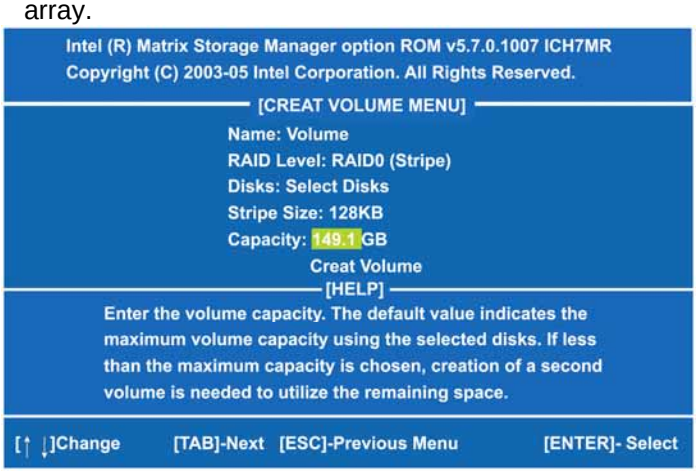

Intel (R) Matrix Storage Manager option ROM v5.7.0.1007 ICH7MR
Copyright (C) 2003-05 Intel Corporation. All Rights Reserved.
[CREAT VOLUME MENU]
Name: Volume
RAID Level: RAID0 (Stripe)
Disks: Select Disks
Stripe Size: 128KB
Capacity: 149.1 GB
Creat Volume
[HELP]
Enter the volume capacity. The default value indicates the maximum volume capacity using the selected disks. If less than the maximum capacity is chosen, creation of a second volume is needed to utilize the remaining space.
[↑ ↓]Change
[TAB]-Next
[ESC]-Previous Menu
[ENTER]- Select

Figure 7

(3)-6 When prompting the confirmation, press "*Y*" to create this volume, or "*N*" to cancel the creation.

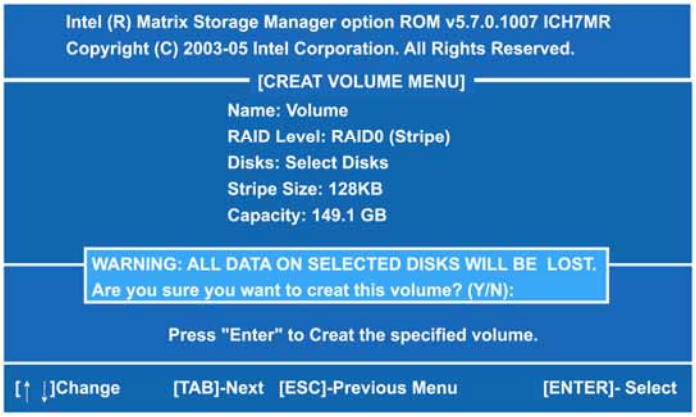

Intel (R) Matrix Storage Manager option ROM v5.7.0.1007 ICH7MR
Copyright (C) 2003-05 Intel Corporation. All Rights Reserved.
[CREAT VOLUME MENU]
Name: Volume
RAID Level: RAID0 (Stripe)
Disks: Select Disks
Stripe Size: 128KB
Capacity: 149.1 GB
WARNING: ALL DATA ON SELECTED DISKS WILL BE LOST.
Are you sure you want to creat this volume? (Y/N):
Press "Enter" to Creat the specified volume.
[↑ ↓]Change
[TAB]-Next
[ESC]-Previous Menu
[ENTER]- Select

Figure 8

After the creation is completed, you can see detailed information about the RAID Array in the DISK/VOLUME INFORMATION section, including RAID mode, disk block size, disk name, and disk capacity, etc.

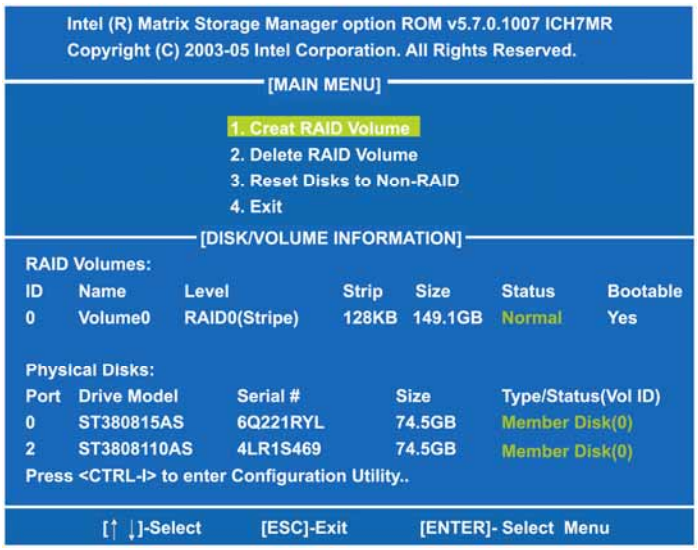

Intel (R) Matrix Storage Manager option ROM v5.7.0.1007 ICH7MR
Copyright (C) 2003-05 Intel Corporation. All Rights Reserved.
[MAIN MENU]
1. Creat RAID Volume
2. Delete RAID Volume
3. Reset Disks to Non-RAID
4. Exit
[DISK/VOLUME INFORMATION]
RAID Volumes:
ID Name Level Strip Size Status Bootable
0 Volume0 RAID0(Stripe) 128KB 149.1GB Normal Yes
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
0 ST380815AS 6Q221RYL 74.5GB Member Disk(0)
2 ST3808110AS 4LR1S469 74.5GB Member Disk(0)
Press <CTRL-I> to enter Configuration Utility..
[↑ ↓]-Select [ESC]-Exit [ENTER]- Select Menu

Figure 9

Delete RAID Volume

If you want to delete a RAID volume, select the **Delete RAID Volume** option in Main Menu. Press ENTER and follow on-screen instructions.

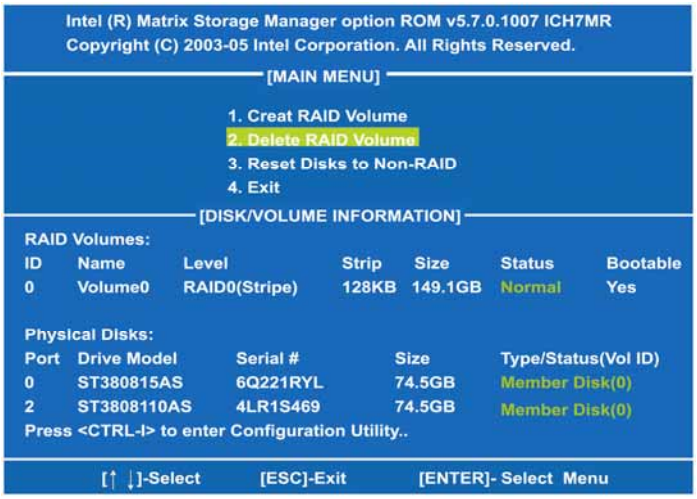

Intel (R) Matrix Storage Manager option ROM v5.7.0.1007 ICH7MR
Copyright (C) 2003-05 Intel Corporation. All Rights Reserved.
[MAIN MENU]
1. Creat RAID Volume
2. Delete RAID Volume
3. Reset Disks to Non-RAID
4. Exit
[DISK/VOLUME INFORMATION]
RAID Volumes:
ID Name Level Strip Size Status Bootable
0 Volume0 RAID0(Stripe) 128KB 149.1GB Normal Yes
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
0 ST380815AS 6Q221RYL 74.5GB Member Disk(0)
2 ST3808110AS 4LR1S469 74.5GB Member Disk(0)
Press <CTRL-I> to enter Configuration Utility..
[↑ ↓]-Select [ESC]-Exit [ENTER]- Select Menu

Figure 10

Please press [ESC] to exit the ICH7MR RAID BIOS utility.

Now, you can proceed to install a SATA controller and the operating system.

(4) Making a SATA Driver Disk

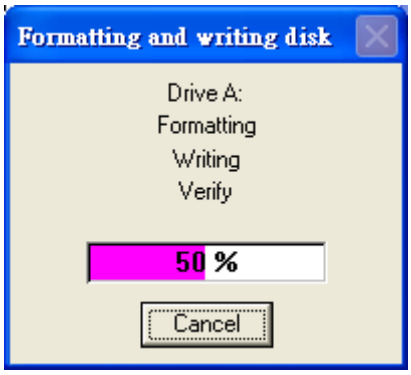
To install the operating system onto a serial ATA hard disk successfully, you need to install the SATA controller driver during the OS installation. Without the driver, the hard disk may not be recognized during the Windows setup process. First of all, please format a blank floppy disk. Secondly, follow up these steps below to produce a SATA driver disk.

(4)-1 Users can insert the Driver CD and the formatted blank floppy disk in another system. And then, please execute the f6flpy32.exe file in the folder of the Driver CD.

Note *Please execute the f6flpy64.exe file, if installing 64-bit Windows Operating System.*

(4)-2 When this screen pops out, please click the "**CONFIRM**" button.

(4)-3 When the Driver is written to the floppy disk, the SATA driver disk is completed.



(5) Installing the SATA controller driver during the OS installation
Now, the SATA driver disk is ready, and BIOS settings configured, you can proceed to install Windows XP onto your SATA hard drive using the SATA driver. Here is an example for Windows XP installation.

(5)-1 Restart your system to boot the Windows XP Setup disk, and press F6 button as soon as you see the message "*Press F6 if you need to install a 3rd party SCSI or RAID driver*" (as Figure 11). After pressing the F6 button, there will be a few moments for some files being loaded before next screen appears.

Figure 11

(5)-2 When you see the screen below, insert the floppy disk containing the SATA driver and press "*S*" (as Figure 12).

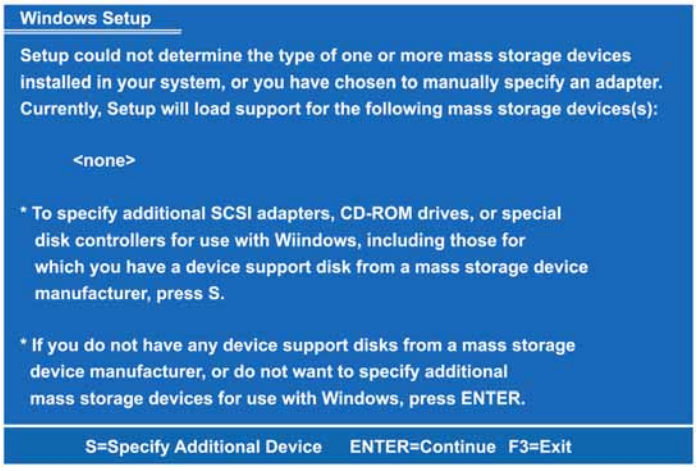

Windows Setup
Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter. Currently, Setup will load support for the following mass storage devices(s):
<none>
* To specify additional SCSI adapters, CD-ROM drives, or special disk controllers for use with Wiindows, including those for which you have a device support disk from a mass storage device manufacturer, press S.
* If you do not have any device support disks from a mass storage device manufacturer, or do not want to specify additional mass storage devices for use with Windows, press ENTER.
S=Specify Additional Device ENTER=Continue F3=Exit

Figure 12

(5)-3 If the Setup correctly recognizes the driver of the floppy disk, a controller menu (as Figure 13) will appear below. Use the ARROW keys to select **Intel(R) 82801GR/GH SATA RAID Controller (Desktop ICH7R/DH)** and press ENTER**.** Then it will begin to load the SATA driver from the floppy disk.

Windows Setup
You have chosen to configure a SCSI Adapter for use with Windows, using a device support disk provided by an adapter manufacturer.
Select the SCSI Adapter you want from the following list, or press ESC to return to the previous screen.
Intel(R) 631xESB/632xESB SATA RAID Controller (Server/Workstation ESB2)
Intel(R) 82801GHM SATA RAID Controller (Mobile ICH7R/DH)
Intel(R) 82801GR/GH SATA RAID Controller (Desktop ICH7R/DH)
Intel(R) 82801GR/GH SATA AHCI Controller (Desktop ICH7R/DH)
ENTER=Continue F3=Exit

Figure 13

Note If a message on the screen saying that one or some file(s) cannot be found, please check the floppy disk or copy the correct SATA driver again from the driver CD.

(5)-4 When the screen appears as below, press ENTER to continue installing the SATA driver through the floppy disk. It will take about one minute to finish the driver installation.

Windows Setup
Setup will load support for the following mass storage devices(s):
Intel(R) 82801GR/GH SATA RAID Controller (Desktop ICH7R/DH)
* To specify additional SCSI adapters, CD-ROM drives, or special disk controllers for use with Wiindows, including those for which you have a device support disk from a mass storage device manufacturer, press S.
* If you do not have any device support disks from a mass storage device manufacturer, or do not want to specify additional mass storage devices for use with Windows, press ENTER.
S=Specify Additional Device ENTER=Continue F3=Exit

Figure 14

After the SATA controller driver installation is completed, you can proceed to install the Windows XP.

MEMO